CITY OF MANCHESTER.

REPORT

ON THE

Health of the City of Manchester,

1902.

BY

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Public Health Office,
Town Hall, Manchester,
August 20th, 1903.

My Lord Mayor, Aldermen, and Members
of the City Council.

I have the honour to present to you the Annual Report on the Health of Manchester for the year 1902.

The death-rate reached last year as low a point as has been attained in any previous year, and the infantile mortality was, for Manchester, remarkably low. The death-rate from summer diarrhœa was far lower than in any previous year.

While the main factor in these satisfactory features of the year's statistics has been the favourable character of the season, it may be hoped that something is due to the efforts made to instruct mothers in the principles of infant feeding, with the assistance of the visitors of the Ladies' Public Health Society.

Having regard to the important character of the work which these visitors are carrying on for the Public Health Office, I am of opinion that an educated lady having a sanitary qualification should be appointed to supervise their work, and receive instructions for their direction.

Additional statistics relating to the health of the City, and to its component parts, will be prepared during the present year from the figures which are now in possession of the office, and, in particular, death-rates for small groups of districts will be prepared, and a detailed statement of the death-rate in relation to conditions of housing will be made.

There is little exceptional to record as regards the notifiable diseases. Diphtheria, however, shows a steady tendency to increase, and vigorous special measures will probably be required to meet the threatening danger. An outbreak of Smallpox began in the third quarter of the year, which made headway in December owing to repeated importations of the disease, and prevailed during the first six months of 1903. By rapid action on the part of the Hospitals Sub-Committee, sufficient accommodation was quickly provided for more cases than occurred, while no effort was spared on the part of the Public Health or Hospitals Staff to keep down infection.

The Assistant Medical Officers have throughout been ready to meet any demand on their time and skill, and the Clerks in the Public Health Office have rendered valuable assistance. It appears impossible to keep down an outbreak of Smallpox without compulsory revaccination at school ages. I beg to commend to your attention the remarks on this subject made under the heading "Smallpox."

The relation of Enteric Fever to Shellfish has this year been brought into prominence by the attention given to the subject by the Royal Commission on Sewage Disposal. The section relating to this disease has been written by one of the Assistant Medical Officers (Dr. Forbes).

Dr. Gordon's statement on the work done in Monsall Hospital during the year will be found in the report at page 194. Much careful work has been bestowed by the Committee on the improvement of various portions of the Hospital.

Clayton Hospital has also been much improved during the year.

A statement will be found on the work done in connection with the notification of Phthisis.

Attention is especially directed to the need of continued education in regard to the spread of infection in places of public resort and in workshops. It is desirable that compulsory notification should be tried with a view to secure more information as to the channels in which infection flows, and in which it may be arrested. But the most urgent requirement is the provision of hospital accommodation for cases from crowded households.

A statement is made by Mr. Brittlebank of the work done under the Milk Clauses of the Manchester Act of 1899. The subject has resumed its former importance, and various interesting and useful suggestions will be found in the course of this statement.

Public attention is being directed to the municipal sterilisation of milk, a subject which the Sanitary Committee will be asked to consider during the ensuing year.

The whole subject of foods, their economy and protection, requires further consideration, with a view to the initiation of useful measures of instruction and administration. There is urgent need for the practical education of the older school girls before leaving school in these elementary duties, such as the tendance of children, cooking, and house management, the due fulfilment of which must be of the greatest moment to the next generation.

The applications of bacteriology to the diagnosis, prevention, and cure of disease, as well as to the protection of foods, are becoming more important and more fully recognised. It is, therefore, of great moment to the public health that the best arrangements possible should be made for bacteriological public health work.

The subject of housing has engaged the attention of the Sanitary Committee in a very high degree during the past year, and two schemes have been recently inaugurated, one on the outskirts and one in the centre of the City. The problems involved are most intricate, and their successful solution demands the thoughtful and assiduous attention which it is receiving.

A summary of the work done under the Factory and Workshops Act, 1901, is given, with special reference to bakehouses. It may be anticipated that increased attention will be paid to the adequate ventilation of workshops.

The report contains a summary of the work of the Sanitary Department, of the Cleansing Committee, and of the Markets Committee so far as food inspection is concerned. For these I am indebted to the Chief Officials concerned.

I have the honour to be,
My Lord Mayor and Gentlemen,
Your obedient Servant,
JAMES NIVEN,
Medical Officer of Health.

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ANNUAL REPORT.

STATISTICAL.

The more outstanding figures relating to the year 1902 are as follows :—

Estimated population			550,355
Persons married in Manchester, Prestwich, and Chorlton Unions			12,330
Annual rate of persons married per 1000 of population on an estimated population of 682,243			18·1
Births ...	Males	9,283	18,152
	Females	8,869	
Annual rate of births per 1000 of the population			33·0
Deaths ...	Males	5,749	11,026
	Females	5,277	
Annual rate of mortality per 1000 of the population			20·0
Annual rate of mortality per 1000—Males			21·6
Annual rate of mortality per 1000—Females			18·6
Deaths under 1 year of age per 1000 born			151
Excess of registered births over deaths			7,126
Estimated increase of population during the year			3,947

It will be seen that the death-rate recorded is lower than in previous years except 1894. In reality it is as low as the death-rate for that record year, allowing for the alteration in the calculated population of 1894, which follows on the basis of the Census populations of 1891 and 1901, perhaps lower if we take into account the manner in which the population increased during that decennium. The birth-rate on the other hand is high.

The year 1902 was, however, one of low mortalities generally, as may be seen from Table 1, in which Manchester, as usual, takes a low position, standing seventy-third out of the 76 large towns.

TABLE I.—RECORDED AND CORRECTED DEATH-RATES PER 1,000 PERSONS LIVING IN 76 GREAT TOWNS IN 1902.

TOWNS, in the order of their Corrected Death-rates	Standard Death-rate *	Factor for Correction for Sex and Age Distribution †	Recorded Death-rate, 1902	Corrected Death-rate, 1902 ‡	Comparative Mortality Figure, 1902 §
Cols.	1	2	3	4	5
England and Wales	18·21	1·0000	16·28	16·28	1,000
England and Wales, less the 76 Towns............	18·84	0·9666	15·31	14·80	909
76 Towns	17·14	1·0624	17·41	18·50	1,136
Hornsey.....................	15·95	1·1417	8·58	9·80	602
Handsworth	16·55	1·1003	10·89	11·98	736
Kings Norton	17·40	1·0466	11·62	12·16	747
Walthamstow...............	17·20	1·0587	11·54	12·22	751
Leyton	17·69	1·0294	11·93	12·28	754
East Ham	17·06	1·0674	11·93	12·73	782
Bournemouth	17·25	1·0557	12·36	13·05	802
Hastings.....................	18·92	0·9625	14·45	13·91	854
Willesden	16·98	1·0724	13·07	14·02	861
Ipswich	18·64	0·9769	14·34	14·01	861
Coventry	18·18	1·0017	14·00	14·02	861
Reading.....................	17·57	1·0364	13·65	14·15	869
Croydon.....................	17·75	1·0259	13·96	14·32	880
Burton-on-Trent	16·93	1·0756	13·72	14·76	907
Aston Manor...............	16·41	1·1097	13·51	14·99	921
Derby........................	16·89	1·0782	13·93	15·02	923
Southampton	18·30	0·9951	15·22	15·15	931
Wallasey	16·63	1·0950	13·85	15·17	932
Great Yarmouth	19·84	0·9178	16·89	15·50	952
Brighton.....................	18·47	0·9859	15·81	15·59	958
Tottenham..................	16·87	1·0794	14·53	15·68	963
Grimsby.....................	17·01	1·0705	14·71	15·75	967
Smethwick..................	16·65	1·0937	14·42	15·77	969
Northampton	17·55	1·0376	15·23	15·80	971
Leicester	17·05	1·0680	14·89	15·90	977
Norwich.....................	19·04	0·9564	16·68	15·95	980
Devonport	17·35	1·0496	15·21	15·96	980
York	17·69	1·0294	15·54	16·00	983
Rotherham	17·57	1·0364	15·64	16·21	996
Plymouth	18·68	0·9748	17·00	16·57	1,018
West Hartlepool	16·59	1·0976	15·14	16·62	1,021
Walsall	17·18	1·0600	15·87	16·82	1,033
Wolverhampton...	17·59	1·0352	16·36	16·94	1,041

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* The Standard Death-rate signifies the rate at all ages calculated on the hypothesis that the rates for each sex at each of twelve age-periods in each town were the same as in England and Wales during the ten years 1891–1900, the rate at all ages in England and Wales during that period having been 18·21 per 1,000.

† The Factor for Correction is obtained by dividing the Standard Death-rate in England and Wales by the Standard Death-rate in each town, and is the figure by which the Recorded Death-rate should be multiplied in order to correct for variations of sex and age distribution.

‡ The Corrected Death-rate is the Recorded Death-rate multiplied by the Factor for Correction.

§ The Comparative Mortality Figure represents the Corrected Death-rate in each town compared with the Recorded Death-rate at all ages in England and Wales in 1902, taken as 1,000.

TABLE 1.—RECORDED AND CORRECTED DEATH RATES PER 1,000 PERSONS LIVING IN 76 GREAT TOWNS IN 1902—*continued.*

TOWNS, in the order of their Corrected Death-rates	Standard Death-rate*	Factor for Correction for Sex and Age Distribution †	Recorded Death-rate, 1902	Corrected Death-rate, 1902‡	Comparative Mortality Figure, 1902 §
Cols.	1	2	3	4	5
Halifax	16·78	1·0852	15·70	17·04	1,047
Newport, Mon.	16·83	1·0820	15·75	17·04	1,047
Portsmouth	17·75	1·0259	16·76	17·19	1,056
Swansea	16·97	1·0731	16·10	17·28	1,061
Bradford	16·47	1·1056	15·82	17·49	1,074
Nottingham	17·28	1·0538	16·67	17·57	1,079
Hull	17·78	1·0242	17·18	17·60	1,081
Warrington	16·87	1·0794	16·41	17·71	1,088
Barrow-in-Furness	16·01	1·1374	15·61	17·75	1,090
Bristol	17·73	1·0271	17·36	17·83	1,095
Stockton-on-Tees	17·37	1·0484	17·02	17·84	1,096
Tynemouth	17·64	1·0323	19·47	18·21	1,119
West Ham	17·03	1·0693	17·08	18·26	1,122
Cardiff	16·74	1·0878	16·80	18·28	1,123
Bury	16·25	1·1206	16·39	18·37	1,128
Sheffield	16·89	1·0782	17·07	18·40	1,130
London	17·32	1·0514	17·73	18·64	1,145
Gateshead	17·27	1·0544	17·70	18·66	1,146
Birkenhead	17·06	1·0674	17·72	18·91	1,162
Huddersfield	16·95	1·0743	17·77	19·09	1,173
Bolton	16·09	1·1318	16·92	19·15	1,176
Blackburn	16·10	1·1311	16·93	19·15	1,176
Leeds	16·68	1·0917	17·55	19·16	1,177
West Bromwich	18·04	1·0094	19·17	19·35	1,189
Birmingham	16·92	1·0762	18·62	20·04	1,231
Sunderland	17·66	1·0311	19·46	20·07	1,233
Rochdale	16·46	1·1063	18·27	20·21	1,241
Stockport	16·87	1·0794	18·99	20·50	1,259
Rhondda	16·55	1·1003	18·69	20·56	1,263
South Shields	17·19	1·0593	19·47	20·62	1,267
Preston	16·63	1·0950	19·07	20·88	1,283
Salford	16·47	1·1056	19·29	21·33	1,310
Oldham	16·18	1·1255	19·07	21·46	1,318
Newcastle-on-Tyne	16·88	1·0788	19·88	21·45	1,318
St. Helens	16·80	1·0839	20·03	21·71	1,334
Bootle	16·48	1·1050	19·72	21·79	1,338
Hanley	16·69	1·0911	20·01	21·83	1,341
Burnley	16·14	1·1283	19·46	21·96	1,349
Middlesbrough	16·71	1·0898	20·18	21·99	1,351
Manchester	16·30	1·1172	19·96	22·30	1,370
Wigan	16·49	11·043	20·64	22·79	1,400
Liverpool	17·02	1·0699	22·47	24·04	1,477
Merthyr Tydfil	17·19	1·0593	23·13	24·50	1,505

For Notes * † ‡ § see page 2.

The principal causes of death during the year were :—

Phthisis	1145	Nephritis		275
Tuberculosis of organs other than the Lungs	389	Convulsions		169
Diseases of the Circulation	1435	Diarrhœa		296
Pneumonia	1342	Measles	242	753
Bronchitis	1090	Scarlet Fever	146	
Atrophy Debility (chiefly in infants)	544	Whooping Cough	242	
Old Age	214	Diphtheria	123	
Premature Birth	364	Malignant Disease		435

The birth-rate in 1902 is 33 per 1000, being higher than any recorded in recent years since 1895; and the marriage rate is 18·1 per 1000, being higher than in 1900 or 1901. These figures give rise to the hope that there is now no depression in the business of the City generally. The birth-rate was, however, much lower in 1901, a circumstance which was ascribed to arsenical poisoning; and possibly some rise in the marriage rate is due to the cessation of hostilities in South Africa. As against these figures must be placed an increase in the average number of paupers in receipt of indoor relief each week.

In 1901 there was an increase on 1900 in the price paid by the Guardians for beef of ⅛d. per pound, and in 1902 there was a further increase of ¼d. per pound in coarse beef, ⅛d. in fine beef, and ⅛d. in mutton. It is difficult to judge from the prices whether the total amount paid for flour had increased or diminished. On the other hand, the prices of both engine and house coal showed a marked decrease on those of the previous two years. It does not appear, therefore, that the price of the staple necessaries of life was materially altered in 1902. The diminished price of coal, however, is merely a return to normal, after a period of inflated value, due to temporary causes :—

TABLE 2.—TOWNSHIP OF MANCHESTER.—PRICES PAID BY THE GUARDIANS FOR FLOUR, BUTCHERS' MEAT, AND COAL, ALSO THE AVERAGE WEEKLY NUMBER OF PERSONS IN RECEIPT OF RELIEF, DURING THE YEARS 1887–1902.

YEAR ENDING	PRICES OF PROVISIONS						PAUPERISM		BIRTH-RATE PER 1,000
	Flour per Sack of 280lbs.	Butchers' Meat, per lb.			Coal, per ton		Average number of Paupers relieved in each week		
		Beef		Mutton	Engine	House			
		Coarse	Fine				Indoor	Outdoor	
1887	25/2 to 30/6	–/3¾	–/6½	–/6½	5/6	8/4	3123	877	33·9
1888	24/– to 29/3	–/3¾	–/6½	–/6½	5/5	8/3	3130	713	33·3
1889	24/11 to 31/2	–/4½	–/6½	–/6½	5/8	8/7	3037	632	33·1
1890	24/9 to 29/11	–/5	–/7	–/7	7/–	9/9	2998	498	31·8
1891	27/3 to 28/11	–/4¼	–/6½	–/6½	8/8	11/2	3118	466	33·8
1892	26/4 to 28/5	–/4	–/6¼	–/6¼	7/6	10/2	3251	551	33·4
1893	21/8 to 25/1	–/3⅞	–/6¼	–/6¼	6/5	10/0	3277	586	33·4
1894	17/2 to 23/9	–/3¾	–/6	–/6	7/1	10/10	3328	395	31·8
1895	15/6 to 21/–	–/3¾	–/6	–/6	5/6	10/3	3343	618	33·4
1896	16/6 to 24/–	–/3⅝	–/5¾	–/5¾	5/7	9/1	3348	533	32·8
1897	17/3 to 33/9	–/3½	–/5⅝	–/5⅝	5/9	8/8	3476	697	32·9
1898	26/7 to 33/8	–/3½	–/5½	–/5½	6/2	8/4½	3519	732	32·3
1899	20/11 to 23/–	–/3½	–/5⅝	–/5⅝	7/5	9/11	3232	597	32·2
1900	20/9 to 22/9	–/3½	–/5½	–/5⅝	11/9¾	14/2½	3189	686	32·4
1901	21/4 to 23/3	–/3⅝	–/5⅝	–/5⅝	11/8	15/2	3403	817	28·7
1902	20/11 to 24/3	–/3⅞	–/5¾	–/5¾	9/3	13/5½	3492	752	33·0

The following table is inserted with a view to observe how far the marriage and birth-rates throughout the country are influenced by the fluctuations in the amount of our exports, which may be taken as an index of the extent to which all classes of the community are occupied. It shows a marked improvement with fluctuations since 1885. During the same period there is an increase in the marriage rate of nearly 2 per 1000, and over the same period also an immense reduction in the birth-rate of the population generally. This can scarcely be due to any other cause than restriction of reproduction in some way or another :—

TABLE 3.—SHOWING THE MARRIAGE, BIRTH, AND DEATH RATES IN ENGLAND AND WALES, WITH THE TOTAL VALUE OF EXPORTS OF BRITISH AND IRISH PRODUCTS, FOR THE YEARS 1865–1900.

Year	Population England & Wales	Rate to 1,000 Persons living			Births less Deaths per 1000	Value of Exports in £ Millions	Year
		Marriages	Births	Deaths			
1865	21,145,151	17·5	35·4	23·2	12·2	166	1865
1866	21,409,684	17·5	35·2	23·4	11·8	189	1866
1867	21,677,525	16·5	35·4	21·7	13·7	181	1867
1868	21,948,713	16·1	35·8	21·8	14·0	179	1868
1869	22,223,299	15·9	34·8	22·3	12·5	190	1869
1870	22,501,316	16·1	35·2	22·9	12·3	200	1870
1871	22,788,594	16·7	35·0	22·6	12.4	223	1871
1872	23,096,495	17·4	35·6	21·3	14·3	256	1872
1873	23,408,556	17·6	35·4	21·0	14·4	255	1873
1874	23,724,834	17·0	36·0	22·2	13·8	240	1874
1875	24,045,385	16·7	35·4	22·7	12·7	223	1875
1876	24,370,267	16·5	36·3	20·9	15·4	201	1876
1877	24,699,539	15·7	36·0	20·3	15·7	199	1877
1878	25,033,259	15·2	35·6	21·6	14·0	193	1878
1879	25,371,489	14·4	34·7	20·7	14·0	192	1879
1880	25,714,288	14·9	34·2	20·5	13·7	223	1880
1881	26,046,142	15·1	33·9	18·9	15·0	234	1881
1882	26,334,942	15·5	33·8	19·6	14·2	242	1882
1883	26,626,949	15·5	33·5	19·6	13·9	240	1883
1884	26,922,192	15·1	33·6	19·7	13·9	233	1884
1885	27,220,706	14·5	32·9	19·2	13·7	213	1885
1886	27,522,532	14·2	32·8	19·5	13·3	213	1886
1887	27,827,706	14·4	31·9	19·1	12·8	222	1887
1888	28,136,258	14·4	31·2	18·1	13·1	234	1888
1889	28,448,239	15·0	31·1	18·2	12·9	249	1889
1890	28,763,673	15·5	30·2	19·5	10·7	263	1890
1891	29,081,962	15·6	31·4	20·2	11·2	247	1891
1892	29,401,898	15·4	30·5	19·0	11·5	227	1892
1893	29,725,358	14·7	30·8	19·2	11·6	218	1893
1894	30,052,397	15·1	29·6	16·6	13·0	216	1894
1895	30,383,047	15·0	30·4	18·7	11·7	226	1895
1896	30,717,355	15·8	29·7	17·1	12·6	240	1896
1897	31,055,355	16·0	29·7	17·4	12·3	234	1897
1898	31,397,078	16·3	29·4	17·6	11·8	232	1898
1899	31,742,588	16·5	29·3	18·3	11·0	264	1899
1900	32,091,907	16·0	28·9	18·3	10·6	291	1900

Having regard to the want of restriction on the part of the more reckless portion of the community, it is very doubtful whether prudence of this sort is not a serious menace to the quality of the population.

There is no diminution in the growth of the population as revealed by the recent Census figures, so that it is quite evident that there are causes at work imposing a check on the natural increase of the population, not the least important being the great improvement in the death-rate which has occurred in recent quinquennia.

The question is beset with difficulties. It may be said, generally, I think, that while it is permissible for medical men to indicate the means of restricting production, where it is impossible to maintain the young family, or where the health of the mother is undermined, nothing but harm is to be expected from the general adoption of artificial means. The result will probably be the selection of an inferior population and a failure to respond to the call for increase in population when the demand is urgent.

During the year 1902 the City of Manchester shows, meantime, a natural increase of 7,126 as compared with an estimated increase of 3,947. This is due partly to the increased birth-rate, partly to the diminished death-rate.

The principal gains and losses on the death-rates in 1902 as compared with those of the previous ten years are exhibited in the following table:—

Gains in 1902 per 1000 persons living.

Measles	0·33
Whooping Cough	0·08
Influenza	0·09
Enteric Fever	0·07
Diarrhœal Diseases	0·99
Puerperal Fever	0·04
Erysipelas	0·02
Tubercular Disease other than Phthisis	0·15
Alcoholism	0·03
Rheumatic Fever	0·01
Nervous Diseases	0·29
Bronchitis	0·31
Pneumonia	0·01
Other Respiratory Diseases	0·05
Digestive Organs	0·13
Old Age	0·05
Total	2·65

Losses in 1902.

Scarlet Fever	0·04
Diphtheria	0·02
Phthisis	0·03
Cancer	0·10
Premature Birth	0·05
Heart and Blood Vessel Diseases	0·09
Urinary Organs	0·08
Total	0·41
Balance of Gain	2·24

It will be seen that the largest gains are under Diarrhœa, Measles, and Respiratory Disease, though substantial improvements are also shown under Tubercular Disease other than Phthisis, Nervous Diseases, and Diseases of the Digestive Organs.

By far the largest is under the heading Diarrhœa, which is only of a temporary character. Considerably over a third of the total gain comes under this head. This is, however, a disease to which, along with allied conditions, such as digestive disorders, we must address our most vigorous efforts.

There are no correspondingly large increases in mortality. Yet the headings under which the largest increases occur—viz.: Cancer, Diseases of the Heart and Blood Vessels, and Diseases of the Urinary Organs, in which an increase has a tendency to be abiding, must arrest our attention. The balance of gain in 1902 amounts to no less than 2·24 per 1000, representing over 1,232 lives saved by the more favourable influences at work in this year.

Attention has been drawn in previous reports to the great influence of seasonal changes on the death-rate for the year. Especially marked in raising the death-rates are a bleak, wet spring, and a warm dry autumn. It may be supposed that as nothing can be done to alter the weather, it is no use having regard to it. But this does not in the least follow, and it may be that by careful attention to the specific mischiefs inherent in certain kinds of weather we may be able in some measure to avert them. For example, there can be no doubt that the facts of Summer Diarrhœa point very strongly to the great value of cooling foodstuffs. Similarly, in severe spring weather the indication is to keep old and weak people under circumstances of temperature as uniform as possible. It is, at all events, the first step to note that very great variations exist in the death-rates according to the weather prevailing.

In the Report for 1901 attention was drawn to the increasing pauperism which existed. As gauges of this, were taken the higher number of persons in receipt of indoor and outdoor relief, and the increased proportion of persons dying in Public Institutions, and especially in the Workhouse Hospitals. It was pointed out that in that year the number of deaths occurring in Public Institutions was 23·2 per cent. of the total number of deaths in the City. This was a considerable advance on previous figures.

On an analysis of the causes of this increase, it was believed that it could be accounted for, in part at least, by the effects of the arsenical poisoning prevailing in the beginning of the year, which were both widespread and serious; but in 1902 the proportion is even higher, being 23·85 per cent of all deaths. The number in receipt of indoor relief is higher than in 1901, while the number in receipt of outdoor relief remains at a high level. Moreover in the winter of 1902 the number of vagrants sleeping out in Manchester became a serious nuisance and danger. But on referring to Table 6, showing the death-rate of persons dying in their own houses, in the Workhouse, and in other institutions, we find that the death-rate of persons dying in the Workhouses shows a marked diminution on recent previous years, and that the increased proportion is due to deaths in other public institutions. It thus becomes doubtful how far the apparent increase of pauperism in 1902 is a true increase, so far as Manchester citizens are concerned. Nevertheless, this is a matter which needs careful observation.

It might reasonably be supposed that a figure which indicates so large a proportion of suffering persons attended to in our large hospitals furnishes to some extent also an explanation of the lowered death-rate, but there is another point of view. There is some reason to believe that persons come from outside, when ill, and live in Manchester only long enough to qualify for admission to the public institutions of the City. This would raise the figure for the death-rate. Both influences are, no doubt, at work, the latter probably having much the greater effect of the two.

The following are the deaths occurring in Public Institutions in 1902 :—

TABLE 4.—POPULATIONS—DEATHS OF MANCHESTER RESIDENTS, 1902, IN PUBLIC INSTITUTIONS.

Township	NAME OF INSTITUTION	Census Population, 1901	Deaths, 1902
ANCOATS	Ancoats Hospital	90	143
	Workhouse Casual Wards (Tame Street)	185	...
CENTRAL	Workhouse Casual Wards	176	3
	Royal Infirmary	274	302
	St. Mary's Hospital	59	20
	Lock Hospital	26	...
	Eye and Ear Hospital	9	3
	Wood Street Mission	18	...
	Chetham Hospital	100	...
ST. GEORGE'S	Girls' Home (Charter Street)	36	...
CHEETHAM	His Majesty's Prison	1,028	9
	Boys' Refuge	220	...
	Northern Hospital (late Clinical)	50	59
	Fairy Hill Home for Working Lads	56	...
CRUMPSALL	Manchester Workhouse	2,767	812
*	Prestwich Workhouse	504	157
BLACKLEY	Manchester and Salford Reformatory	91	...
	Litchford Hall	231	4
MOSTON	St. Mary's Home	45	2
	St. Joseph's Home	50	...
	St. Bridget's Orphanage	27	...
NEWTON	Monsall Hospital	428	240
	Little Sisters of the Poor (Culcheth Hall)	165	11
CLAYTON	Clayton Hospital	20	1
ARDWICK	Industrial School	204	...
	Nicholls Hospital	96	...
OPENSHAW	Crossley's "Home of Peace"	10	20
RUSHOLME	St. Joseph's Girls' School	176	...
	St. Mary's Home	61	...
CHORLTON-ON-MEDLOCK	St. Joseph's Boys' School	418	...
	Royal Eye Hospital	103	...
	Little Sisters of the Poor (Plymouth Grove)	199	18
	Casual Wards (All Saints)	...	1
	Southern Hospital	28	17
	Cancer Hospital	14	22
	Maternity Home	9	14
	Home for Young Girls	25	...
	Church Army Labour Home	20	...
	Penitentiary	42	...
HULME	Cavalry Barracks	489	...
	Loretto Convent	81	...
* OUTSIDE CITY	Withington Workhouse	2,013	644
	Pendlebury Hospital	180	36
	Prestwich Lunatic Asylum	2,614	69
	St. Anne's Home, Dunham Massey	...	1
	St. Joseph's Home, Patricroft	...	6
	Victoria Hospital, Blackpool	...	1
	Robinson Kay Home for Incurables, Bury	...	1
	Workhouse, Wigan	...	1
	Parish Workhouse, Liverpool	...	1
	Salford Dispensary, Bethesda, and Hope Hospitals	...	12
	TOTAL DEATHS		2,630

* Proportion only.

We may now consider the causes of death for the whole City and for both sexes.

Tables E and F show the annual death-rates from a number of causes for a series of years, and Table K gives a more extended list for 1902 only.

Table E deals with zymotics, and though the death-rates of successive years are comparable, the death-rates of the different diseases in any one year are not comparable in the fullest sense, since they are in reality levied on different age groups and on different aggregates of the population.

LOWERED DEATH-RATES UNDER VARIOUS DISEASE HEADINGS.

It appears, then, from Table E that the death-rates are lower than the average from Measles, Whooping Cough, Enteric Fever, and Diarrhœa. The death-rates from Enteric Fever and Diarrhœa are lower than any previously recorded—from Diarrhœa much lower. From Scarlet Fever and Diphtheria the death-rates are above the average.

Table E shows a further advance in the death-rate from malignant disease. Diseases of the Circulation also exact a high mortality, though not nearly so high as in 1899 and 1900.

The death-rates from diseases of the Urinary System and of the Generative System are also unusually high.

The death-rate from Phthisis is slightly lower than in 1900 and 1901, but is still higher than in 1898 and 1899. As previously explained, this is due in part to the increasing relative numbers at the ages most susceptible to Phthisis. On the other hand, the death-rate from other forms of tubercular disease is lower than in any previous year. This may, in part, be due to improvement in the milk supply, in part to the relatively smaller numbers of young persons who suffer most from these other forms of the disease.

The death-rate from Nervous Diseases is also the lowest on record.

The death-rate from Respiratory Diseases is moderately low.

From diseases of the Digestive System it is the lowest on record.

Such is also the case with regard to deaths from Puerperal Fever, though no improvement is manifest in the deaths from child-birth generally. Yet it is no small source of satisfaction that the record should have been broken in so many causes of death—Enteric Fever, Diarrhœa, Tubercular Disease other than Phthisis, Nervous Diseases, Diseases of the Digestive System, and Puerperal Fever.

With the exception of Puerperal Fever, all these are susceptible to the efforts which have been made to improve the methods of using milk. More cannot be said.

Attention has been drawn in previous years to the diminished number of deaths from Convulsions, a cause of death intimately connected with proper methods of feeding.

Turning to Table K, we find that the death-rate from Erysipelas is lower than the average, which indicates a diminution of septic infection during the year, when taken in conjunction with the lowered death-rate from Puerperal Fever.

Alcoholism, Rheumatic Fever, and Old Age also show a diminished death-rate.

The table shows also that the diminution in the death-rate from Respiratory Disease as compared with the average comes entirely under Bronchitis, and does not extend to Pneumonia, which exacts an altogether excessive mortality in Manchester.

DEATH-RATES AT DIFFERENT AGES. LOW INFANTILE MORTALITY.

Turning now to the age incidence of the death-rate for the whole City, the particulars are to be found in Tables A, B, C, D, J, and M.

Turning first to Table J, which gives the infantile mortality in deaths per 1000 births from a number of causes, we find that as compared with recent years the aggregate figure of 151·44 is remarkably low, and that the improvement is conspicuous in respect of Diarrhœa, Tubercular Disease, Convulsions, other Nervous Diseases, and Wasting Diseases, so that there is ground for the hope that there is some improvement in the methods of feeding. This is rather increased when we find that under the heading "Suffocation" and "Found dead in bed" there is also an improvement, though the indication is indirect.

Table D shows the ages at which the various diseases exact their greatest mortality, but I have nothing to add on this score to what has been pointed out in previous reports.

To Table M there is no corresponding table in the Report for 1901, as the figures necessary to distribute the population in ages were not available, nor is it possible to compare these with the figures for previous years, as the Census has shown so great an alteration in the age distribution of the population, that it is not possible to use the later figures of death-rates in age groups of the decennium 1892-1901.

Referring, however, directly to the number of deaths in different age groups, it appears that the death-rate is low in 1902 at all ages except in the age group 45–65.

DEATH-RATES OF MALES AND FEMALES AT ALL AGES AND AT GROUPS OF AGES COMPARED.

The following table shows that the death-rate of males is considerably higher than the death-rate of females. It also shows that the excess in the male death-rate holds at all ages except 5 to 10, and 10 to 15. The higher female death-rate at these ages is due mainly to physiological causes, girls developing much more rapidly at this period of life than boys. The death-rates for 1902 represent the normal picture :—

TABLE 5.—ANNUAL RATES OF MORTALITY IN MANCHESTER IN THE YEAR 1902, AT TWELVE GROUPS OF AGES AMONGST PERSONS—MALES AND FEMALES.

GROUPS OF AGES	PERSONS			MALES			FEMALES		
	Estimated Population	Deaths	Death-rates	Estimated Population	Deaths	Death rates	Estimated Population	Deaths	Death-rates
All Ages	550,355	11,026	20·03	266,446	5,749	21·58	283,909	5,277	18·59
0 —	64,773	4,190	64·69	32,231	2,249	69·78	32,542	1,941	59·65
5 —	57,667	304	5·27	28,619	141	4·93	29,048	163	5·61
10 —	55,318	162	2·93	27,728	73	2·63	27,590	89	3·23
15 —	55,241	198	3·58	26,795	106	3·96	28,446	92	3·23
20 —	58,042	299	5·15	27,325	144	5·27	30,717	155	5·05
25 —	96,614	701	7·26	46,649	372	7·97	49,965	329	6·58
35 —	69,887	1,008	14·42	34,309	551	16·06	35,578	457	12·84
45 —	48,590	1,246	25·64	23,464	691	29·45	25,126	555	22·09
55 —	28,459	1,355	47·61	12,952	717	55·36	15,507	638	41·14
65 —	12,360	1,026	83·01	5,144	492	95·65	7,216	534	74·00
75 —	3,179	483	151·93	1,162	194	166·90	2,017	289	143·27
85 +	225	54	240·00	68	19	279·12	157	35	223·40

DEATH-RATES IN DISTRICTS COMPARED.

The facts are contained in Table 6 and in Tables G, H, J, L, and N of the Appendix. Table 6 exhibits for the different Sanitary Districts the death-rates occurring in the Home, the Workhouse, and in other Public Institutions, also the total death-rates. It shows that, as usual, the death-rate was much the heaviest in the Manchester Township, and heavier in the Southern than in the Northern districts.

After the three Central districts the death-rate was highest in Hulme, then in Bradford and Beswick. The death-rate was lowest in Cheetham, being only 12·74 per 1000, and was very low in the outlying districts of Crumpsall and Moston.

The death-rate amongst persons dying in the Workhouse was greatest in the Central district, then in descending order in St. George's, Ancoats, Chorlton-upon-Medlock, and Hulme.

This is very largely a lodging-house mortality. Among persons dying in their own houses the death-rate was greatest, in descending order, in Bradford, Ancoats, Beswick, Newton Heath, Hulme, Clayton, St. George's, Openshaw. The district of Bradford occupies its usual bad pre-eminence, and this figure must be taken as indicating more clearly than the general figure the insanitary condition of the district.

See Table 6 on following page.

On referring to Table G, it will be seen that the highest birth-rates occur in Hulme, West Gorton, Ardwick, Openshaw, Clayton, Beswick, Bradford, Harpurhey, Ancoats, St. George's, and Cheetham, and that in 1902 the very high birth-rates affect a somewhat more limited range than usual, including the contiguous districts of Bradford, Beswick, Clayton, Ardwick, and Openshaw, pre-eminently industrial districts.

It will be noted that Cheetham has a high birth-rate, and the remarkably low death-rate of 12·74 per 1000, giving a natural increase of 21 per 1000.

From Table H we see that the highest infantile mortalities occur in Ancoats, St. George's, Beswick, Bradford, and Clayton, but that even the highest are

TABLE 6.—1902.—DEATH-RATES * IN THE HOMES OF THE PEOPLE, IN WORKHOUSES, AND IN HOSPITALS FOR THE VARIOUS DIVISIONS OF THE CITY, CALCULATED ON THE CENSUS OF 1891 AND 1901.

STATISTICAL DIVISIONS	Estimated Populations	Death-rate per 1000 of persons dying in their own homes	Death-rate per 1000 of persons dying in Workhouses	Death-rate per 1000 of persons dying in Hospitals	Total death-rate per 1000
City of Manchester....	‡ 550,355	15·26	2·94	1·84	20·03
I. Manchester Township	133,590	16·36	6·12	2·66	25·13
II. Northern Districts ...	171,925	14·75	0·92	1·56	17·22
III. Southern Districts ...	244,840	15·01	2·60	1·59	19·19
I. Ancoats	44,731	17·24	4·85	3·17	25·26
Central	29,280	14·86	8·88	3·01	26·74
St. George's	59,579	16·43	5·71	2·10	24·24
II. Cheetham	38,000	10·50	0·66	1·58	12·74
Crumpsall	8,955	10·61	1·68	0·78	13·07
Blackley...............	9,028	14·95	0·78	0·78	16·50
Harpurhey............	16,831	15·09	0·77	1·13	16·99
Moston	13,165	12·31	...	1·06	13·37
Newton Heath	41,046	16·95	1·11	1·79	19·86
Bradford	24,046	18·76	1·37	1·71	21·83
Beswick	11,840	17·23	1·27	2·36	20·86
Clayton	9,014	16·53	0·55	2·11	19·19
III. Ardwick	42,039	15·01	2·09	2·05	19·15
Openshaw	27,627	16·04	1·34	1·19	18·57
West Gorton	29,889	13·38	2·01	1·51	16·90
Rusholme and Kirk..	20,841	14·03	1·12	1·40	16·55
Chorlton-on-Medlock	57,685	13·66	3·71	1·25	18·62
Hulme	66,759	16·84	3·31	1·86	22·00

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* In this table, *every death* occurring in a Public Institution has been referred to the District from which the patient originally came.

‡ Population estimated to middle of 1902 on new Census population.

below the average for most years. The percentage of illegitimacy is highest in Chorlton-upon-Medlock, Central, West Gorton, Ardwick, and Hulme; the lowest in Beswick, Cheetham, Bradford, Moston, and Openshaw.

There is the usual discrepancy between the mortalities of legitimate and illegitimate infants, but no correspondence between a high proportion of illegitimacy and a high infantile death-rate.

Table L shows the very high proportion of 7·6 per cent of deaths certified by the Coroner. It is to be hoped that the Coroner is fully alive to his responsibility, and requires a post-mortem in as many cases as possible.

In the Central district no fewer than 12·5 per cent and in Cheetham no fewer than 9·7 of the deaths are certified by the Coroner. The proportion of uncertified deaths is highest in Ancoats, Central, St. George's, and Moston. For the whole City the proportion is only 0·8 per cent of the total. It is to be hoped that the proportion will be kept at its present low figure.

Table J shows the infantile mortality for certain diseases in the three principal divisions of the City.

As a rule the mortality from each disease given in the table is highest in the Manchester Township, and higher in South Manchester than in North Manchester.

To this rule there are two exceptions—North Manchester has in 1902 the highest infantile mortality from Measles. This is not a regular occurrence. The other exception occurs year after year, and no satisfactory explanation is forthcoming. The infantile mortality ascribed to Tubercular Disease is always highest in South Manchester, then in the Manchester Township.

Table K enables us to compare the mortalities in the three main divisions from a number of causes. From Scarlet Fever in 1902 the death-rate is highest in North Manchester, then in South Manchester. From Diphtheria the highest mortality is in South Manchester, then in North Manchester. From Puerperal Fever and Erysipelas the death-rate is highest in South Manchester. From Phthisis the death-rate is much higher in the Manchester Township than in South Manchester, much higher in South Manchester than in North Manchester. From other forms of Tuberculosis at all ages the order is the same.

From Cancer the death-rate is highest in South Manchester. From brain and nerve disease, from disease of the circulation, from Bronchitis, and from digestive diseases the mortality is highest in the Manchester Township, then in South Manchester. From Pneumonia, however, North Manchester has a slightly higher death-rate than South Manchester.

From Table N we are enabled to compare the death-rates in the three main divisions of the City at groups of ages for the year 1902. In this way the hindrance to a proper comparison of death-rates which arises from the different age constitutions of their populations is avoided, and the death-rates fall into their proper ages.

It appears generally that with diseases which are influenced more by the steady continued pressure of influences inimical to health, including poverty, the death-rate is usually much higher in the Manchester Township at each age group than in South Manchester, and higher in South Manchester than in North Manchester. This relation is very conspicuous in the death-rates for each age group from all causes.

At ages under 5 years the ordinary relation holds for Diarrhœa and Diseases of the Digestive System. In 1902, however, Measles exacted the heaviest death-rate in North Manchester, as did also Scarlet Fever. From Diphtheria, Whooping Cough, and Enteric Fever the death-rates were highest in the Manchester Township. From Tubercular Disease the death-rate was nearly the same in the Manchester Township and in South Manchester, and more than double that of North Manchester at this age. From Diseases of the Nervous System there was no great difference in the three divisions, while from Disease of the Circulatory Organs the death-rate was highest in North Manchester. From causes other than those enumerated the usual relation prevails.

At ages 5 to 15, that is to say at school ages, the usual order of the death-rates prevails for Tubercular Disease, Diseases of the Respiratory System, Diseases of the Digestive System, and diseases not specified. From Scarlet Fever at this age the death-rate was highest in North Manchester, from Diphtheria in South Manchester. From Measles and from Enteric Fever the death-rate was highest in North Manchester.

At ages 15 to 25 the usual order prevails in respect of Diseases of the Nervous System, of the Circulation and of the Respiratory System. From

Enteric Fever the death-rate was highest in North Manchester, while from Tubercular Disease it was considerably higher in North Manchester than in South Manchester. From Diseases of the Digestive System it was highest in South Manchester.

At ages 25 to 45 the usual order prevails for Enteric Fever, Tubercular Disease, and Diseases of the Respiratory System. From Disease of the Nervous System, though the death-rate in the Manchester Township is much the highest, that of North Manchester is higher than that of South Manchester. From Diseases of the Digestive System and Diseases of the Urinary System the death-rate was highest in South Manchester.

At ages 45 to 65 years the usual order prevails in respect of Tubercular Diseases, Diseases of the Nervous System, Diseases of the Circulation, Diseases of the Digestive System, and Diseases of the Urinary System. From Tubercular Disease the death-rate in the Manchester Township is more than three times the death-rate in North Manchester; and the death-rates from Circulatory and Respiratory Disease in the central division are much in excess. This may be taken in large measure to mark the results of intemperance, direct and indirect.

At ages over 65 years the relation still holds for Tubercular and Respiratory Disease, the death-rate ascribed to Tubercular Disease in the Manchester Township being more than seven times that ascribed to the same cause in North Manchester. From other causes the death-rate has a varying incidence. Diarrhœa exacts the heaviest death-rate in North Manchester, as do also Diseases of the Nervous System. Diseases of the Circulation affect South Manchester most severely, as do also Diseases of the Digestive System. From Disease of the Urinary System, again, the death-rate is highest in North Manchester.

It is, therefore, more especially in respect of Tuberculosis and Respiratory Diseases that the Manchester Township suffers heavily by comparison with South Manchester, and South Manchester by comparison with North Manchester.

This is also the order of relative poverty, and of the circumstances which lead to poverty, and which are produced by it. The worst circumstances produced by it are overcrowding, inattention to cleanliness, and inferior housing.

Attention has been drawn in previous reports to the same dissociation of relative incidence of respiratory disease from industrial relations, and of its association with poverty, deficient sanitary conditions, and bad social habits.

INFECTIOUS DISEASES.

The diseases included in the Infectious Disease (Notification) Acts, 1889 and 1899, are as follows: Smallpox, Scarlet Fever, Diphtheria, Membranous Croup, Typhus Fever, Enteric or Typhoid Fever, Relapsing Fever, Continued Fever, Puerperal Fever, Erysipelas, and Asiatic Cholera. The following cases were notified in 1902 and in the ten previous years, and the year 1902 is compared with the average of the previous ten years :—

	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	Aver'ge for 10 Years	1902
Smallpox	118	607	282	51	1	...	...	2	3	1	114	27
Scarlet Fever ...	1,671	2,031	2,230	2,302	2,389	1,790	897	1,467	2,507	2,692	1,998	2,282
Diphtheria...... Memb. Croup	497	622	512	402	239	150	196	248	337	457	366	422
Typhus Fever ...	6	1	...	...	1	2	...	3	*5	39	6	...
Enteric Fever ...	610	618	460	493	513	503	642	381	378	359	496	378
Relapsing Fever	...	...	...	...	...	...	...	...	...	...	...	...
Puerperal Fever	92	93	51	33	25	49	44	35	49	55	53	47
Erysipelas	...	...	...	...	...	...	...	...	177	318	248	253
	2,994	3,972	3,535	3,281	3,168	2,494	1,779	2,136	3,456	3,921	3,074	3,409

* There were a number of cases overlooked, and not notified, which were traced by the Medical Officer of Health after the patients had recovered.

The number of deaths for eleven years from the more common diseases is shown in the following table, 1902 being compared with the average :—

From	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	Aver'ge for 10 Years	1902
Measles	369	293	222	505	567	628	271	699	254	292	410	242
Scarlet Fever ...	139	140	116	173	198	124	65	46	105	127	123	146
Diphtheria...... Memb. Croup	130	182	149	113	83	46	51	85	101	133	107	123
Enteric Fever ...	124	127	91	95	118	95	120	73	75	75	99	66
Smallpox	2	49	21	2	...	...	...	...	...	...	7	...
Influenza	140	120	45	194	53	107	64	219	239	99	128	80
Whooping Cough	368	240	286	250	359	299	170	227	371	224	279	242
	1,272	1,151	930	1,332	1,378	1,299	741	1,349	1,145	950	1,155	899

SMALLPOX.

The course of the outbreak of Smallpox, which commenced towards the end of 1902 and appears to be now drawing to at least a temporary close, has been the subject of a continuous series of reports to the Hospitals Sub-Committee. The disease was started in Manchester towards the end of September, but it was not till the beginning of December that it became evident that it had obtained a definite foothold in the City, the total number of known cases occurring previous to that time being only five.

During December, however, 20 cases occurred, and it was evident that the most strenuous efforts would have to be made to avert a very decided outbreak. Eleven distinct importations occurred during 1902, and the Local Government Board returns showed that the risk of importation from other towns was considerable.

At this point it may be remarked that the services of the Clerks in the Public Health Office have been freely drawn upon for special work when occasion demanded, to the detriment of the regular work, but with great advantage so far as the prevention of Smallpox was concerned.

Thus Mr. Roos carried out a house-to-house visitation in one district, and assisted at re-vaccinations at a number of common lodging-houses in the evening. He also visited several common lodging-houses and urged re-vaccination. Mr. Roos has also frequently been on duty in the evenings.

Mr. Dunks has made a number of house-to-house visitations.

Mr. Stephenson has assisted at a number of re-vaccinations in the evening.

When the first cases occurred it appeared necessary only to take the ordinary precautions, but as they became more numerous fresh lines of action presented themselves.

It has been customary in Manchester since 1894 for the Medical Officer of Health to visit every case of Smallpox with a view to economise Hospital space, and also in order to ascertain the most pressing precautions required.

I, therefore, personally visited the great majority of the earlier cases, although at times I was not able to do so. Most of the remaining cases have, however, been visited by the Medical Assistants, and latterly this duty has mostly fallen upon them.

All contacts have been carefully collected, and, as far as possible, have been vaccinated by the Public Vaccinators, although at times it seemed expedient for us to carry out the vaccination ourselves.

Enquiry has been made into any articles of clothing which could have been removed from the infected houses, and every effort has been made to get persons thus exposed to infection re-vaccinated.

In only one instance has Smallpox occurred in a person taking in washing from a Smallpox case, although this is, no doubt, due chiefly to the prevailing habit of doing all the washing at home. Indeed the case in question, being that of a washerwoman to two common lodging-houses, is one in point.

The systematic collection of particulars, the supervision of disinfection, and the continued observation of contacts, as well as the collection of details, has fallen to the Sanitary Inspectors in general, who are furnished with a memorandum on Smallpox to guide their enquiries, and with a special inquiry form.

The place of work of the patient has been always ascertained, and an urgent request sent to the head of the business concerned to get the employees re-vaccinated. Effectual precautions have also been taken in respect of other workers in the household.

With very rare exceptions we have received every assistance, and in some cases re-vaccination has been practically compulsory. But difficulties have occasionally arisen. These have partly concerned the workpeople, who have objected that, supposing their arms to be bad, they would lose their wages. They have, therefore, as far as they could, resisted. To a limited extent this risk has been guaranteed by the Corporation, and in not a few cases it has been guaranteed by the employers.

It seems reasonable that by one or another this risk should be covered. It is, of course, necessary that the arms alleged to be so badly affected as to incapacitate the workman, should be examined for the Corporation by a Medical Practitioner, or by the Medical Staff at the Public Health Office. As a matter of fact, so far as the Corporation is concerned, this has been always done, and a very large number of arms have been examined either at the Public Health Office or at common lodging-houses.

This is a matter which might fitly be made the subject of legislation.

Another serious source of difficulty with large firms has been the extended area, coming under a variety of Public Vaccinators, from which their workpeople have been drawn. To arrange for these to be vaccinated each by his own Public Vaccinator, and to ascertain that he has actually been so vaccinated, means a delay which would render the precaution futile. In such cases it has not seldom appeared the best course for the Medical

Assistants to revaccinate the whole of the employees. A very large amount of public vaccination has thus been carried out by Dr. Cowie and Dr. Forbes, who have between them vaccinated over 1,000 persons.

In other instances employers have paid private practitioners to vaccinate their employees.

But, seeing that the supply of lymph to public vaccinators is in a manner guaranteed, it appears to me that they should be paid in respect of persons vaccinated by them at workplaces (using the word in a general sense) in their district, irrespective of the place of residence of such persons. It is not altogether, or, perhaps, mainly a question of fees, since the law as it exists puts the public vaccinator carrying out such vaccinations in the position of taking work from another public vaccinator. A Medical Officer of Health cannot, of course, have regard to such considerations when the occasion is pressing.

When a case of Smallpox occurred at the Tame Street Tramp Ward, the Medical Officer (Dr. Williams) communicated at once with myself, and I visited the patient in nearly every case. With the consent of the Chairman of the Hospitals Sub-Committee (Alderman McDougall), and subsequently of the Sub-Committee, a shilling was given to every tramp who submitted to re-vaccination in the presence of Smallpox. In this way, generally, the great majority of the contacts were vaccinated. I take this opportunity of expressing my sense of the acumen displayed by Dr. Williams in detecting cases of Smallpox, and of the value of the service which he has thus rendered to the community.

In dealing with contacts at common lodging-houses, great reluctance was felt in paying for the vaccination of contacts. At first sixpence was offered, and afterwards a shilling at the larger common lodging-houses. There appeared to be a distinct danger that, if any larger sum were offered, vagrants would be attracted to the City merely by the prospect of the sum to be obtained in an infected house. Otherwise every effort was made to induce the contacts at common lodging-houses to be vaccinated, and much time was given in the evenings to persuading the men to submit to examination, with but a partial measure of success.

When, at a private house, any inmates declined to be re-vaccinated, they were kept under observation, and the risk of their developing the disease was reported to their employers.

At the commencement of the outbreak, handbills relating to Smallpox and Vaccination were distributed widely in the district in which the cases occurred, and posters were placarded over the district. The following are copies :—

CITY OF MANCHESTER.

SMALLPOX HANDBILL.

Notice.

1.—Smallpox is prevalent in this City to a serious extent.

2.—Smallpox is an infectious disease just like Scarlet Fever, and unprotected, or incompletely protected, persons coming into the presence of a person having Smallpox, wittingly or unwittingly, are liable to be attacked.

3.—Unprotected persons are those who have never been successfully vaccinated. Doubtfully and incompletely protected persons are those who have not been successfully vaccinated for some years. All persons should be completely protected.

4.—Successful vaccination is an absolute safeguard against Smallpox for some years, the period varying with the number and size of the marks from successful vaccination, and with individual peculiarity. One small vesicle is inadequate, and should not be regarded as successful vaccination.

5.—Vaccination is quite safe when performed with proper precautions.

6.—Successful recent vaccination, or a previous attack of Smallpox, is the only adequate protection against an attack of Smallpox when there has been exposure to infection.

* 7.—Successful vaccination is a protection against attack for some years, but protects against death from Smallpox for at least 10 years.

8.—Reliance should not be placed on vaccination to protect against death from Smallpox if more than 20 years has elapsed since the last successful vaccination.

9.—A previous attack of Smallpox should not always be relied upon, as this disease is often confounded with Chickenpox. Moreover, Smallpox does occur twice in the same person, though very seldom.

10.—The percentage of deaths amongst unvaccinated persons attacked with Smallpox is very high. It is also high amongst vaccinated persons attacked with Smallpox if more than 25 years has elapsed since the last successful vaccination.

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* Section 7 is the expression of personal experience. Statistics show that after successful vaccination attacks from Smallpox for some years are rare, and death from Smallpox within 10 years very rare.

The death-rate is very low amongst vaccinated persons attacked with Smallpox if less than 20 years has elapsed since the last successful vaccination.

11.—All cases of Chickenpox should be notified by the head of the house to the Medical Officer of Health.

12.—As a rule, Chickenpox is distinguished from Smallpox by these marks: Persons (mostly children) attacked by Chickenpox are not taken ill seriously. The eruption comes out more abundantly on the body, face, and head than on the arms and legs. It comes out gradually. Some of the pocks have a thin skin, and are filled with clear or milky fluid. They differ greatly in size, and usually itch.

13.—Mild cases of Smallpox usually begin abruptly with headache, fever, and a sense of severe illness, often with pain in the back. After two days an eruption comes out on the face, and perhaps on the arms and legs. Usually, in mild cases, there is very little eruption on the front of the body. In mild attacks, after the eruption appears, there is no longer any sense of illness. When such an illness occurs, however slight the eruption may be, a Doctor should be called in, or the case should be notified to the Medical Officer of Health by the householder.

14.—No case either of Chickenpox or Smallpox should be left without Medical attention. The slightest case of Smallpox may give rise to a fatal infection in others.

15.—You are strongly advised at the present time to protect yourselves and your family and dependents by vaccination.

16.—Vaccination may be performed either by your own Medical Attendant or by the Public Vaccinator of your district. The latter will vaccinate free of charge.

17.—Persons desiring Vaccination to be performed by the Public Vaccinator, either on themselves or on an unvaccinated child, must write to him requesting him to call at their homes, or must call at his Surgery.

18.—The names of the Public Vaccinators, with their addresses, are herewith given. Should a sufficient demand arise for the vaccination of adults in the evening, the Boards of Guardians would probably make special arrangements.

Medical Officer of Health.

NAMES AND ADDRESSES OF VACCINATION OFFICERS.

MANCHESTER UNION.

District	Public Vaccinators	Address
Ancoats	Dr. W. T. Williams	39, Great Ancoats Street
Central	Dr. J. B. Mann	26, St. John Street
St. George's (Rochdale Road District)	Dr. J. M. S. Preston	120, Cheetham Hill Road

CHORLTON UNION.

District	Public Vaccinators	Address
Ardwick	Dr. John Watson	182, Stockport Road
Openshaw	Dr. E. E. Jones	919, Ashton Old Road
West Gorton (part of)	Dr. F. J. Webb	52, Cross Lane, Gorton
West Gorton (Longsight)	Dr. J. Howe	28, Kirkmanshulme Lane
Rusholme	Dr. G. R. Gowland	118, Wilmslow Road
C.-on-M. (St. Luke's Ward)	Dr. W. B. Pritchard	272, Oxford Street
C.-on-M. (All Saints' Ward)	Dr. Wm. Davies	25, Stretford Road
Hulme (St. George's Ward)	Dr. S. Woodcock	215, Chester Road, and 454, Stretford Road
Hulme (Medlock Street Ward)	Dr. J. Williams-Jones	154, Chorlton Road

PRESTWICH UNION.

District	Public Vaccinators	Address
Cheetham	Dr. C. F. Kitchen	112, Cheetham Hill Road
Crumpsall	Dr. H. W. Boddy	Crumpsall Terrace, Cheetham Hill
Blackley Harpurhey Moston	Dr. C. G. L. Skinner	1, Church Lane, Harpurhey
Newton	Dr. A. B. Steward	Mulberry House, Oldham Road, Newton Heath
Miles Platting	Dr. J. W. Moore	14, Oldham Road, Miles Platting
Bradford Beswick	Dr. J. Hudson	Ebor House, Ashton New Road, Bradford
Clayton	Dr. E. Johnstone	121, North Road, Clayton
Kirkmanshulme	Dr. B. W. Conway	Overton House, Longsight

CITY OF MANCHESTER.

SMALLPOX POSTER.

Vaccination.

Smallpox has made its appearance in Manchester.

The only adequate protection against it is successful recent Vaccination. One small Mark is not enough.

All who have not been successfully vaccinated within five years should, as soon as possible, have Vaccination performed.

Vaccination may be obtained Free of Cost by persons in their respective districts who have not been successfully vaccinated within 10 years, from the Public Vaccinators whose Names and Addresses are on the preceding page.

Medical Officer of Health.

Public Health Office,
Town Hall, Manchester,
December 2nd, 1902.

Similar placards to the above were also posted in those townships of the Chorlton and Prestwich Unions comprised within the city.

The following handbill was also sent to every keeper of a common lodging-house within the City in October 1902 :—

CITY OF MANCHESTER.

SMALLPOX.

To Keepers of Common Lodging-houses.

Smallpox has made its appearance in Manchester in such a manner as particularly to threaten lodging-houses, and it is therefore urgent that all possible precautions should be taken.

It will be necessary for you to keep a careful look-out for the occurrence of Smallpox.

Any eruption which has made its appearance on any inmate within the last two or three weeks on the face and hands, or on the face alone, especially if attended with illness, however slight, should be viewed with grave suspicion, and the Medical Officer of Health should be at once informed of any such case.

Every keeper of a common lodging-house having in his house a case of infectious disease is obliged, under penalties, to send separate intimation of such a case respectively to the Medical Officer of Health, Town Hall; the Chief Constable, Town Hall; and to the Relieving Officer of the District.

I must request you, for the present, to keep a daily register showing the names of your lodgers, the places from which they are stated to have come, and their alleged destination.

Should any suspicious cases occur in your house, it is desirable not to alarm the rest of the lodgers by informing them of the supposed nature of the illness until this is settled by the Medical Officer of Health, whom you must at once inform.

When a case of Smallpox has occurred in a house, the other inmates should not be permitted to leave the house.

Inquiries should be made as to all fresh arrivals whether they have been re-vaccinated, and an entry made in the register accordingly, giving the time since the operation was performed.

Persons unprotected by recent vaccination should be urged to get vaccinated, and immediate intimation should be sent to the Medical Officer of Health of any person desiring vaccination.

Please to study the enclosed handbill, and bring its contents to the attention of your lodgers.

By order,

Medical Officer of Health.

Public Health Office,
Town Hall, Manchester,
October 1st, 1902.

A further handbill was sent to the keepers of common lodging-houses bearing date January 2nd, 1903.

CITY OF MANCHESTER.

SMALLPOX.

To the Keepers of Common Lodging-houses.

Owing to the recent increase of Smallpox, and to the fact that several cases of Smallpox have occurred in common lodging-houses, which have spread the disease, it will be necessary for the Keepers of common lodging-houses and their managers to keep a much stricter look-out for cases of Smallpox than they have hitherto done.

It will be necessary for some months that every common lodging-house keeper or his deputy shall, daily, make a systematic inspection of every person within his house, to see whether such person presents symptoms suspicious of Smallpox.

In examining the lodgers he may make them file before him slowly, one by one, throwing a light on the forehead, or he may examine them in bed. If any pimples or spots or raised eruption is present, he must find out whether any similar spots have come out on the arms.

If there are such spots on the arm his suspicions should be strongly roused, but their absence does not prove that the case is not Smallpox.

He must then ask whether these spots are old, or have come out within the last two or three weeks. If the eruption is recent his suspicions of Smallpox will be greatly strengthened.

He must further ask whether the person affected was ill for some days before the spots came out.

An eruption which has come out on the face within the last two or three weeks, especially if the person affected was ill for some days before the spots appeared, is most likely to be Smallpox.

It is necessary, however, to remember that owing to the dulled condition of many persons in common lodging houses, they are not always acutely conscious of the illness which has preceded the eruption. It is also necessary to remember that, however ill a man may have been before the eruption of Smallpox appeared, in all but the worst cases, he feels quite well after the eruption has come out.

The lodging-house keeper must not expect a man to feel ill after the eruption has appeared.

When he has found a case which he suspects may be Smallpox, he must put him as far as possible from the other inmates, and at once report the case to the Medical Officer of Health, through the nearest Police Station.

If a case is strongly suspected to be Smallpox, or has been stated by a medical man to be Smallpox, the other inmates of the house must be detained until their danger has been explained to them, and an opportunity of re-vaccination given by the Medical Officer of Health.

By order,

Medical Officer of Health.

Public Health Office,
Town Hall, Manchester,
January 2nd, 1903.

In addition, copies of the handbill already mentioned were sent for distribution, and posters to be put up in such houses.

Posters and circulars were also sent, as mentioned in the Report of December 8th, 1902, to the Church Labour Home in Brunswick Street, the Hood Street Labour Home, the Wood Street Mission, and the Night Asylum in St. John's Parade, Deansgate.

A circular was also issued to publicans requesting them to report to the Medical Officer of Health any suspicious eruption which might come under their notice. Only one such intimation was made, and the case proved to be one of Syphilis.

Although a number of cases have occurred in publicans, no other intimation has been received. It seems difficult to believe that some of them could have failed to observe suspicious cases.

The history of cases occurring in public-houses has amply justified the appeal, while showing that it is hopeless to expect assistance from that source.

In a report, dated December 8th, attention was called to the danger of allowing persons to sleep out, as they were known to do in considerable numbers at the brickcrofts, Cheetham Hill, on the Infirmary seats, and elsewhere.

In the same report attention is called to the necessity of special vigilance in the case of factories, warehouses, and workshops concerned with the manufacture, storage, and making up of cloth.

In this report, also, it is mentioned that the Common Lodging-house Inspectors under the Watch Committee were engaged in visiting common lodging houses with a view to ascertain the existence of Smallpox.

The Manchester Board of Guardians had already put on an additional Vaccination Officer to make a house-to-house inspection, and urge the necessity of primary vaccination.

It is also recorded in the same report that house-to-house inspection was being made in affected districts with a view to detect any overlooked attack of Smallpox, handbills being left at every house visited.

The last procedure has been maintained throughout whenever there appeared reason to suppose that any case of Smallpox had been overlooked in a district, or when, from the history of the first attack, it seemed likely that fresh cases would occur at unknown points at a certain time after the first attack.

Such were the earlier steps taken in connection with the invasion of Manchester by Smallpox, but as the disease progressed some rearrangements became necessary. These will now be indicated.

Owing to the number of common lodging-houses invaded it became necessary to organise the vaccination of contacts. The Public Vaccinators, although quite uncertain as to whether their fees would be paid, owing to the impossibility of reinspecting a great portion of the lodgers, threw themselves most heartily into the work, which necessarily had to be carried out late in the evening. In this they were assisted by the Medical Officer of Health and his staff, and also by the Sanitary Inspectors, the Clerks from the Public Health Office, and Mr. Boyd from the Clayton Hospital. The lodgers were thus persuaded, cleansed, examined for previous vaccination, registered for vaccination, vaccinated, dressed, and paid a shilling on the completion of the operation.

It became necessary, however, in addition to keep up a close examination of the lodgers, and since these drifted from one place to another it became increasingly clear that all would have to be examined.

This I worked out personally in the first instance, and I came to the conclusion that in order to control the course of the disease in common lodging houses an examination would have to be made of every lodger during a period of doubt. At first reliance was placed on the keepers of the lodging-houses to carry out the necessary examinations, but this proved utterly futile.

Then an attempt was made to rely on the Medical Officers of Health, on Mr. Boyd, and on the Common Lodging-house Inspectors to carry out the necessary examinations. But, owing chiefly to the impossibility of getting all the lodgers together at one time, and also to the strain placed on the Medical Officers, this had to be abandoned.

Finally it was determined, in consultation with Alderman Mc.Dougall, to put on two skilled Officers under the Watch Committee and two Sanitary Inspectors (being all that could be spared) to go round the common lodging-houses at night, and examine every man with a bull's-eye lantern to see whether he showed any signs of Smallpox. The Sanitary Committee are indebted to the Watch Committee for their ready aid and for two most useful and willing Inspectors.

The value of this procedure was signally shown the first night when I took round two Inspectors to show them how to conduct the examinations, when three cases of Smallpox were discovered.

The commencement of this course of procedure is recorded in the report of February 16th, 1903.

It is only proper to say, however, that the value and practicability of this mode of observation had previously been worked out, the most essential point in the new departure being that the inspections were made systematically and at such a period as to admit of nearly all the lodgers being examined.

It is quite possible to conduct these examinations with very little disturbance to the lodgers, and without even wakening them, except when they occupy separate cubicles.

The examination is, however, of little use unless every person in the common lodging-house is examined.

The Inspectors have by this means detected quite a considerable number of cases, and though sometimes cases not Smallpox have been detained, that is of small consequence in face of the positive results achieved.

Altogether, 32 cases of Smallpox have been discovered in common lodging-houses by these examinations.

Once or twice a case has slipped through. When Smallpox has actually invaded a common lodging-house the examinations have been continued for 18 days at least every night. But it has been impossible to carry out these examinations every night in houses not invaded, and these others have been inspected every two or three nights only, so that a first case might escape for some nights.

But the success attending this procedure has been very great, and it has played a most decided part in keeping Smallpox within small bounds in this City.

To Dr. Williams again we are indebted for having accompanied the Inspectors on several nights, to make examinations in large common lodging-houses near to his house, and to instruct them in the methods of examination.

It will be understood that the greatest difficulty was experienced in getting contacts in common lodging-houses re-vaccinated, and the better off in respect of work they were, the greater was the difficulty. These, however, were not the persons who caused us the greatest amount of anxiety, since they could be kept under observation during the 16 or 17 days succeeding the occurrence of a case. It was rather in respect of the shifting population that one felt the danger of the disease being spread by contacts, and here a great piece of good fortune befell us. The principal shelter for homeless vagrants in the beginning of 1903 was the Wood Street Mission, off Deansgate.

As many as 350 were being housed nightly, and provided with sleeping room, supper, and breakfast. This appeared to entail a decided risk until the happy thought occurred to us to ask the managers to make re-vaccination a condition of admission in all those who were not protected by re-vaccination successfully performed within five years. This they readily agreed to do.

In all, 428 vaccinations were carried out at this Mission, chiefly by Dr. Bentley Mann, partly also by Dr. Forbes and myself, and I gratefully record the ready support given by the Managers of this Institution, who converted what might have been a public danger into a public security.

This Shelter was opened on January 15th, 1903, and on January 23rd the re-vaccination of all susceptible persons admitted commenced, and lasted to February 6th, when the Shelter was closed. During this time 428 persons were vaccinated, and 47 were turned away on refusal. Altogether 7,865 applicants were admitted, 5,113 from other places in Manchester. The numbers admitted ranged from 300 to 429.

Two other shelters for homeless persons, viz., the Night Asylum in St. John's Parade, Deansgate, and the Church Army Shelter in Ogden Street, followed their example, though the vaccinations here were on a much smaller scale.

It is no small matter for congratulation to find the supporters of these Charities so willing to insist on their applicants complying with the conditions requisite to protect the public from epidemic disease as a preliminary to admission, and I must confess to a feeling of disappointment when the Wood Street Mission was closed.

It is a striking fact that no falling-off of applicants appeared to occur, although they were obliged to submit to vaccination, which as inhabitants of common lodging-houses, a number of them had previously declined to accept. On the other hand, large numbers were found to be protected by recent vaccination.

We may now briefly review the measures which appear to have been successful in confining the outbreak within small limits :

1. The wide diffusion of knowledge regarding Smallpox in its slighter forms. Nevertheless, many slight cases of Smallpox have been overlooked or suppressed.

2. The efforts made in the case of common lodging-houses to get contacts re-vaccinated, and to keep the remaining inmates under observation. The successful procedure here was the systematic examination of all inmates by special night Inspectors, which still continues.

For the last few months, however, common lodging-house keepers, when a case of Smallpox has occurred, have been required to admit no fresh lodgers for over a fortnight, and during that period to supply a nightly list of lodgers. They have also been requested to take every possible means to retain those lodgers present when the case occurred.

3. The careful hunting up of contacts in the case of private houses, and the keeping under observation of all those who, owing to not being re-vaccinated, or to being re-vaccinated too late, or to any other circumstance, might be expected to develop Smallpox as the result of known cases.

4. The wholesale re-vaccination of employés in concerns, one of whose people had developed Smallpox.

5. The re-vaccination of persons admitted into Shelters.

These measures probably cover nearly the whole ground of prevention, which has been a matter of detailed and unsparing work in all concerned.

It should be possible on any future occasion to formulate at once a comprehensive and sufficient scheme of prevention, though it is only fair to remember that such a wholesale measure as the examination with a lantern of every inmate of a common lodging-house, night after night, is only possible in face of a pressing danger.

Also, at the commencement of an outbreak, and when it begins to wane, slight overlooked or concealed attacks—it is impossible to distinguish—are proportionately more numerous than at the height of the outbreak.

The treatment of the cases may now be briefly mentioned :

At the commencement of the outbreak the Hospital was being used for the reception of cases of advanced Phthisis, and one of the Assistant Medical Officers was in charge. When Smallpox cases began to come in he remained in charge, and when he left Manchester the Senior Assistant Medical Officer took his place. When it became evident from the number of fresh importations of the disease that there was most probably going to be a large number of cases, I took up my residence there, and the Junior Assistant Medical Officer followed. It was thus possible, with no excessive amount of effort, to give ample attention to the patients, to keep all the threads of the outbreak together, to concert visits to institutions, to visit any cases occurring, and to meet the growing requirements of the Hospital.

Early in 1903 it became evident that the wards set apart for Smallpox would no longer suffice, and first the two houses which had been adapted for the reception of advanced consumptives were taken in and utilised for female cases, which have been very sparse throughout compared with the males.

It became a clear necessity to enclose these houses and the adjoining field, which was placed at the disposal of the Sanitary Committee by the Cleansing Committee.

It also became a necessity to dispense with the previous closet arrangements, and to provide water-closets and hospital sinks, as well as new baths. This necessity again entailed laying a drain under the river and extensive alterations to the branch drains, as well as the provision of an annexe to the male wards to receive the new water-closets.

As the numbers continued to mount, it became necessary to utilise four cottages on the side of the river remote from the administrative block. This entailed the construction of new drains and the provision of water-closets, sinks, baths, and arrangements for hot water, as well as internal alterations. Further, these cottages had to be enclosed by a close wooden hoarding, and the road had to be diverted, all of which required considerable patience and arrangement.

In order to lose no time in case of a sudden extension of the disease, the Chairman thought it desirable to lay the foundation of a wooden pavilion, in which I quite concurred. This was accordingly done.

In these extensive alterations the Committee had the benefit of the knowledge and skill of the City Surveyor and the City Architect, who personally visited the Hospital and settled questions arising with regard to sewerage, diversion of the footpath, and the construction of a new ward.

When some further slight alterations have been made, the whole area will be completely shut in, and blocked to trespassers.*

With the exception of the drain carried under the river to the main sewer, which was constructed rapidly under the supervision of the City Surveyor, the whole of the work connected with the drainage of the Hospital, and the construction of closets, has been done by the House Drainage Department or under their supervision.

In this way 110 beds have been rendered immediately available, and fresh pavilions can be rapidly put up on the plan submitted by the City Architect.

At the beginning of the outbreak two charge nurses from Monsall Hospital had the care of the patients. One of these was subsequently appointed matron on March 16th, 1903, and has fully vindicated her appointment by the Committee.

As the cases increased, 3 nurses were obtained from the Nursing Home at 341, Oxford Street, and probationers were sent over from Monsall Hospital. Several nurses were also engaged directly from outside. Ward-maids were also obtained from Monsall Hospital. At no time was the Hospital under-staffed for more than a few days.

The work of the staff has been carried on in a strenuous spirit. Not to mention the more usual difficulties which attend the treatment of severe cases of smallpox, there were several difficulties which called for special effort. On the whole, the usual complications of smallpox were less numerous than is generally the case. To this an exception might perhaps be made as regards boils. Certainly affections of the eyes were much less numerous, and rheumatism and bedsores were almost absent. A species of septic sore-throat, however, which did not appear to threaten life, kept cropping up for some months.

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* These have now been carried out.

It became necessary, therefore, to devote special care to the manner and completeness with which the wards were cleaned, and the scattering or carriage of infectious matters avoided.

In order to avoid the aërial conveyance of Smallpox, but also from experience of the apparent beneficial effect of this procedure on the patients, every case of Smallpox is, in the acute stage, oiled with a 2·5 per cent solution of carbolic oil twice daily. In this way it is hoped to prevent the infective matter from getting diffused into the atmosphere. Where it appears necessary, however, for the treatment of severe cases, extensive portions of the body or even the whole body is kept swathed in lint wrung out of boric solution, and enclosed by gutta-percha tissue, while a mask of the same kind is placed over the face. Parts of the body not so dressed are kept oiled.

It is scarcely necessary to point out that the persistent performance of this unpleasant and tedious work requires both energy and determination.

The complete success which has accompanied this measure is shown on the following map, on which is exhibited the cases occurring from the commencement of the outbreak in September, 1902, to the week ending June 20th, 1903.

It will be seen that no case of Smallpox is placed within half-a-mile of the Hospital, while nearly all occurring at the nearest points can be accounted for otherwise than by aërial or other conveyance from the Hospital The case in question was employed at the Hospital, and declined to be vaccinated. The attack was slight, and was undiscovered. There were, indeed, two other cases, not living near the Hospital. One was a pointsman on the railway, but, on investigation, it appeared very doubtful whether he had had Smallpox. The other was investigated five weeks after an illness. He is stated to have had no eruption, and no traces of an eruption could be detected. This man had carted coke to the Hospital. It is certain that his brother's wife subsequently had an overlooked attack, but his brother's family also declared that this man had had no eruption.

Further, large crowds congregate round the Hospital on Saturdays and Sundays and pass close to the male wards. Yet the persons attacked were almost certainly none of them belonging to these promenaders.

Again, a number of workmen were engaged in work at the Hospital constructing a special drain; most of them refused to be vaccinated, yet none of them contracted the disease.

It may, I think, fairly be claimed that the precaution mentioned, combined with dressings and masks in severe cases, served to imprison the infection.

Inferentially, as well as from direct observation, praise must be given to the manner in which the very irksome duty of oiling the patients was carried out.

The difficulties of administrative adjustments have been removed by the consultations which I have frequently had with the Chairman of the Hospitals Sub-Committee, who has personally visited the wards, being protected by recent vaccination, and by the readiness of the Sub-Committee to appreciate the necessities of the case and to accept his views.

But it may be worth while mentioning one or two difficulties which have been encountered on the medical side.

The question of diagnosis is an exceedingly important one, and by no means easy in all cases. A certain number of cases occur in common lodging-houses which it is almost impossible to diagnose. Many of the inmates suffer from a form of acne, which they universally ascribe to drinking. In not a few the nervous system has become so blunted that the initial illness of Smallpox fails to attract their attention. When, then, Smallpox attacks a person suffering from this form of acne, and without any perception of initial illness, it is in a few instances almost impossible at first to diagnose the disease.

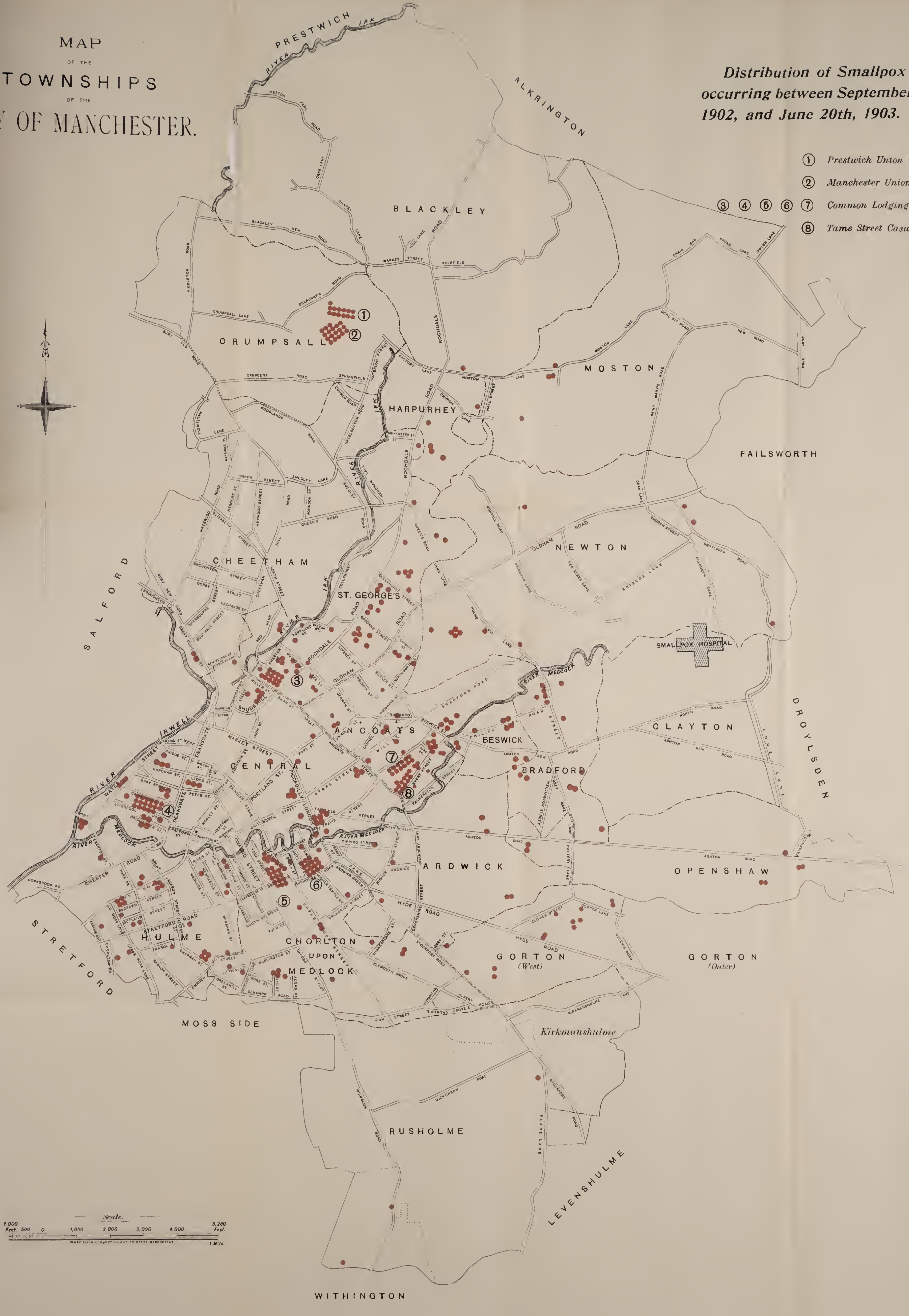
It is in such cases that a detention room is very valuable, and Mr. Williamson, the Superintendent of the Cleansing Department, placed at our disposal a small room in which two or three persons could sleep for a night or two.

Any case of a doubtful character was sent to this room at the Oldham Road Yard, and attended to by the men in the Yard. Generally the illness proved to be a harmless one, but in any case the suspect was revaccinated. In several instances, on the other hand, the progress of the case showed that the illness, at first somewhat indefinite, was really Smallpox. The patient was removed to the hospital, and the room disinfected.

As usual, a large number of cases were overlooked—there was reason to believe that a few had been concealed. But it is very difficult to prove that

MAP
OF THE
TOWNSHIPS
OF THE
CITY OF MANCHESTER.

Distribution of Smallpox Cases occurring between September 26th, 1902, and June 20th, 1903.



concealment had been practised. Not a few have not been diagnosed by the medical attendant. The only remedy for this is education in the detection of the disease. Demonstrations were given at the hospital to any medical men who cared to see the cases. There needs, however, no great subtlety. The Public Health staff are available for consultation, and any papular eruption appearing on the face and arms, or on the face alone, especially if preceded by an illness, should be reported as suspicious. Great pains have been taken to make this clear to medical men, and also to the public; but the cases are overlooked as before, though not perhaps quite to the same extent.

I see no way of dealing with the concealment of slight attacks of Smallpox. Once the case is discovered, the facts are easily enough collected except as regards concealment. Nor have I often found that an attempt is made to conceal overlooked attacks on the occurrence of a fresh case, or that questions are untruly answered; but it would almost always be impossible to prove concealment.

The question of including Chickenpox amongst the notifiable diseases has presented itself. This step has not appeared necessary, nor can it be said that any material harm has arisen from its omission.

It is not too much to say that by far the most important factor in the spread of Smallpox in Manchester has been the overlooking of cases, especially at common lodging-houses, before the Night Inspectors began their work.

The next most important factor is the difficulty of ascertaining all contacts, and getting them revaccinated in common lodging-houses. A large proportion in the poorest lodging-houses have been vaccinated under the inducement of a shilling. But it is only those who are hard up who yield to this inducement, and in the better class lodging-houses it fails.

In private houses either a certain degree of compulsion is exerted, or, at all events, the contacts are kept under observation.

All who express their views on the question of vaccination agree that, in any new Vaccination Act, contacts with a case of Smallpox should have to submit to revaccination with certain protected exceptions. But this is in itself an inadequate protection, and the only enactment likely to be effectual is one which requires general compulsory revaccination at the age of 12. This can be organised and carried out, and it may be doubted whether the revaccination of contacts can.

As regards common lodging-houses, under such compulsory revaccination of contacts it is likely that on the occurrence of a case of Smallpox there would be a general evasion. As regards private houses, the temptation not to mention contacts living outside the house would become, in many cases, very strong. Indeed, it is now a factor to be reckoned with. Nevertheless, I consider that the compulsory revaccination of contacts should be part of a new Act.

But it will require careful consideration how far the untoward consequences to be apprehended are to be averted.

There can, I think, be no doubt that, on the written statement of the Medical Officer of Health that the revaccination of all susceptible persons at a place of business who have come in contact with a case of Smallpox should be performed without delay, the Public Vaccinator for the district should be obliged forthwith to revaccinate the susceptible contacts, and should be entitled to fees, as if the persons vaccinated lived in his district.

We are, however, by no means without power at present, except as against tramps and the inmates of common lodging-houses, or where at a large place of business the manager happens to be an anti-vaccinator. Nor are we to suppose that, when all has been done that every adviser suggests, we can escape from the essential difficulties of failure to recognise and determination to conceal. We shall still have to rely on education, and on administrative alertness and painstaking.

Detail Work.

The following tables relate to the cases reported and removed to Hospital during the year 1902 :—

TABLE I.—SHOWING THE AGES, SEX, AND CIRCUMSTANCES OF VACCINATION OF CASES ADMITTED DURING 1902 INTO CLAYTON HOSPITAL. THERE WAS NO DEATH AMONGST THESE CASES.

Ages		0–4	5–14	15–24	25–44	45–64	65 and upwards	All ages
Vaccinated ...	m	...	...	1	14	4	...	19
	f	...	...	...	...	...	...	0
Unvaccinated.	m	1	...	...	1	...	...	2
	f	...	1	1	...	...	...	2
No Marks ...	m	...	...	...	2	...	...	2
	f	...	1	...	1	...	...	2
Totals		1	2	2	18	4	0	27

Table II.

Relation of the severity of the attack to Vaccination.

	Vaccination fair or good	Poor	Unvaccinated	No Marks	Total
Attack discrete	10	5	2	3	20
Semiconfluent	2	1	...	1	4
Confluent	...	1	2	...	3
Total	12	7	4	4	27

Table III.

Classification of the cases according to the source of the attack.

Contracted outside Manchester.		Contracted in Manchester—Source Traced		
Persons living in a Private House	Persons living in a Common Lodging-house or Vagrant	From a known case outside a Common Lodging-house	From a known source at a Common Lodging-house	From an overlooked attack in a Private House
3	10	3	1	2

Contracted in Manchester, but the source untraced.

Living at a Private House	In a Common Lodging-house	Sleeping out
4	3	1

Total...25

Of the 27 cases treated in Hospital during 1902, it will be seen that no fewer than 13 were importations. One case was received from Withington and one from Gorton.

Cases not Smallpox.

In addition to these cases, there were admitted five cases which were not Smallpox :

1. A woman aet. 28 was admitted on August 24th with varicella, and was successfully revaccinated.
2. A man aet. 21 was sent in from Crumpsall suffering from an iodide eruption, and from ulcerative endocarditis. Revaccinated successfully before admission.
3. A man aet. 20 was admitted from the Tramp Ward, Tame Street, on December 10th with a history of illness followed by a papular eruption on the face ; revaccinated on admission. On December 21st he was taken ill, and on December 22nd had a few pimples on the forehead. Both attacks were very doubtful in their character.

4. A man aet. 20 was admitted on December 11th from the Tramp Ward, Tame Street; ill December 5th; a few papules on the arms on December 8th. Revaccinated on admission.
5. A man aet. 30 admitted from the Tramp Ward, Tame Street, on December 12th. Ague (?) Not vaccinated. On December 22nd was ill. On December 25th a few papules on his face of a doubtful character. Said to have had smallpox last year.

In view of the fact that fresh legislation in regard to vaccination is impending, I would briefly record my opinion as to the form which such legislation might usefully take. Our recent experience of the difficulties has served to show us where our defensive position may best be strengthened. We have, however, to consider also not merely what is desirable but what is practicable. It is by some supposed that the most effectual safeguard against the continuance of Smallpox would be vaccination of contacts. Unfortunately, where this is most needed, viz., in common lodging-houses and tramp wards, it is most difficult to secure. Further, vaccination of contacts is no safeguard against the spread of Smallpox when the first case has not been recognised—an occurrence but too common. On the other hand, the experience of Germany shows that where general revaccination is successfully and generally performed at the age of 12, Smallpox is unable to take on an epidemic form.

Doubtless this immunity from epidemics is strengthened by the revaccination of older persons when isolated cases of Smallpox occur. The essential protective, however, is revaccination at school age. The age of 12 appears suitable. There is very much less objection to revaccination at this age than at later periods of life, since it does not entail an important interruption of work.

No doubt the machinery for vaccination at this age would be comparatively easy to arrange by means of the schools.

(1) Taking these considerations into account, the most useful and also the least troublesome legislation to administer would be compulsory revaccination at the age of 12.

No other vaccination legislation will compensate for the absence of this.

(2) In my opinion, if an Act is passed requiring all persons not successfully vaccinated within five years to be revaccinated at the age of 12, it should retain the Conscience Clause of the Vaccination Act of 1898.

(3) Vaccination of all persons who have come in contact with a known case of Smallpox should be made compulsory.

This requirement is apt to fail when it is most needed, and, besides, it entails an increased danger of cases of Smallpox being concealed by tramps and persons of that class.

Nevertheless, the advantages of such a requirement outweigh its disadvantages, provided it can be shown to be workable.

It is specially needed in large concerns. But inasmuch as vaccination at unsuitable periods after the occurrence of a case of Smallpox may bring discredit on the operation, the general compulsory vaccination advocated should be made subject to the certificate of the Medical Officer of Health of the district that it is necessary.

Such legislation is especially needed for those cases in which the head of the firm is unconvinced of the necessity for vaccination, or indifferent on the subject.

To be useful, also, it should be carried out at once. Hence, it should be placed in the hands of the Medical Officer of Health, who should be in a position to call upon the Public Vaccinator for the district to vaccinate all contacts in a concern forthwith.

This, again, entails payment to the Public Vaccinator for such vaccinations.

In the interest of the public health, also, it is desirable that when a number of contacts are vaccinated under efficient supervision, payment should be made to the Public Vaccinator, whether he can subsequently inspect the persons vaccinated or not.

In the absence of such a provision, a great impediment exists in the way of vaccinating a large number of persons at a common lodging-house. Payment should also be made to the Public Vaccinator whether he personally performs the vaccination, or whether it is performed under his supervision by any medical practitioner.

It is purely mischievous when payment can be refused because vaccination has been performed, not by the Public Vaccinator himself, but by a colleague.

(4) Dr. E. W. Hope, Medical Officer of Health for Liverpool, has strongly advocated vaccination being under the Sanitary Authority. Up to this year I have been very doubtful as to the expediency of this course; but I am now quite satisfied that the change should be made. There is no lack of readiness on the part of Public Vaccinators when they can rely on their services being paid, and often when they cannot; but the Medical Officer of Health should be in a position at once to require the services of the Public Vaccinator.

(5) If sufficient powers as regards vaccination are obtained, I do not advocate the system of isolating contacts. This is perfectly hopeless where a very large number of persons have been in contact. Our experience, moreover, does not show that it is necessary. Where revaccination cannot be carried out, or would be too late, it suffices for practical purposes to keep persons who have been in contact under observation for a certain limited period.

(6) Should tramps, presenting themselves for admission into tramp wards or unions, require to produce evidence of recent vaccination during epidemic periods, or else to submit to vaccination? There is much to be said for this requirement.

Inasmuch as charitable organisations for the reception of indigent persons of the working class have been willing, during the present year, to insist in this requirement, it cannot be regarded as excessive if the same requirement is made applicable to tramp wards and to tramps admitted into workhouses.

Incidentally, I may remark on a question which has several times been put to me. A considerable amount of revaccination has been going on during 1903—will that not largely tend to arrest the spread of Smallpox next year? I cannot say that, in my opinion, it will, though, no doubt, some protective effect has been produced. As regards common lodging-houses especially, the population is so fluctuating that very little impression, beyond the immediate one, is to be looked for.

Revaccination must be much more general before we can rely upon it as an efficient safeguard against outbreaks.

(7) Another question which has been prominent is the deficiency often existing in the supply of reliable lymph. That is, I believe, largely a matter of arrangement, but no doubt if the Public Health Institute, established in Manchester under Professor Delépine, could be made available for the supply of vaccine lymph, this would be an additional safeguard against the spread of Smallpox. To be quite effectual, however, the manufacture of lymph should be in excess of the demand, and a certain amount of waste would necessarily ensue. If the City Council desire that such a supply of lymph should always be available in Manchester, they must be prepared to pay for its production, and to allow for a certain amount of material not being utilised. It is questionable whether the supply of vaccine lymph is not best left in the hands of private institutions, though these should be under Government supervision.

There are other questions connected with vaccination which require to be considered, but those which I have mentioned appear to be most essential. There is some danger, I think, that the essential object to be attained, viz., revaccination at the age of 12, will be put aside by comparatively unimportant matters, such as the precise constitution of the Vaccination Authority. Compared with general compulsory revaccination at school age, all other improvements in the machinery of vaccination sink into insignificance. Not only would compulsory revaccination at the age of 12 be effectual to arrest outbreaks, but it would be far the easiest provision to administer. I would again press on the attention of the Corporation the importance of supporting such legislation. If compulsory revaccination at the age of 12 can be brought into operation, all difficulties about smallpox hospitals, vaccination of contacts, isolation of families, and so forth, will dwindle to trifling magnitude. There will remain, no doubt, the conveyance of Smallpox by tramps to be dealt with; but we have already shown our ability to cope with this danger.

SCARLET FEVER.

The following are the tables relating to the occurrence of this disease at different periods of the year and in the different sanitary districts of the City, and to its severity in districts and at different ages.

TABLE 1.

SCARLET FEVER, 1902.—ATTACKS IN WEEKS ACCORDING TO DATE OF RASH.

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER	
Jan. 4	23	April 5	34	July 5	32	Oct. 4	63
,, 11	30	,, 12	22	,, 12	23	,, 11	63
,, 18	56	,, 19	35	,, 19	33	,, 18	70
,, 25	48	,, 26	32	,, 26	48	,, 25	55
Feb. 1	39	May 3	34	Aug. 2	27	Nov. 1	60
,, 8	35	,, 10	32	,, 9	43	,, 8	52
,, 15	34	,, 17	44	,, 16	33	,, 15	48
,, 22	33	,, 24	36	,, 23	64	,, 22	50
Mch. 1	40	,, 31	37	,, 30	54	,, 29	52
,, 8	41	June 7	45	Sept. 6	58	Dec. 6	43
,, 15	44	,, 14	40	,, 13	48	,, 13	44
,, 22	40	,, 21	44	,, 20	74	,, 20	37
,, 29	22	,, 28	36	,, 27	51	,, 27	50
						Jan. 3	51
Total...	485	Total...	471	Total...	588	Total...	738

City Total, 2282.

TABLE 2.

SCARLET FEVER ATTACKS, 1902.—RATES PER 1,000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1897	1898	1899	1900	1901	Mean	1902
Twelve Towns *	3·87	3·51	5·10	4·82	5·07	**4·47**	5·80
City of Manchester	3·34	1·66	2·69	4·62	4·93	**3·45**	4·15
Manchester Township	3·58	1·16	2·27	3·49	3·66	**2·83**	3·07
North Manchester	3·67	1·77	4·07	5·85	5·30	**4·13**	5·09
South Manchester	3·01	1·88	2·12	4·44	5·37	**3·36**	4·09

* These are Blackburn, Bolton, Bradford, Burnley, Huddersfield, Hull, Leeds, Liverpool, Oldham, Preston, Salford, and Sheffield.

Table 3.

1902—Scarlet Fever Attacks in Districts, with Attack Rate, Case Fatality per cent., and Removals to Hospital per cent.

Districts	Attacks	Attack Rate per 1,000 living	† Case Fatality per cent.	Removals to Hospital per cent.
Ancoats	58	1·30	8·6	91·4
Central	87	2·97	5·7	89·7
St. George's	265	4·45	6·0	87·9
Cheetham	163	4·29	3·7	85·9
Crumpsall	86	9·60	2·3	68·7
Blackley	40	4·43	...	65·0
Harpurhey	82	4·87	6·1	70·8
Moston	80	6·08	3·8	73·8
Newton Heath	142	3·86	9·2	78·2
Bradford	132	5·49	7·6	84·1
Beswick	56	4·73	12·5	87·5
Clayton	73	8·10	8·2	76·7
Ardwick	186	4·42	9·7	83·9
Openshaw	113	4·09	4·4	70·9
Gorton (West)	138	4·62	5·1	85·5
Rusholme and Kirk.	163	6·50	5·5	80·4
Chorlton-on-Medlock.	200	3·47	5·0	69·0
Hulme	218	3·27	6·4	90·8
City of Manchester	**2282**	**4·15**	**6·2**	**81·2**

† Corrected: the fatal cases are those actually occurring amongst the cases notified.

TABLE 4.

SCARLET FEVER.—NUMBER OF ATTACKS, OF DEATHS, AND CASE FATALITY PER CENT. AT DIFFERENT AGES, FOR THE TEN YEARS 1892-1901, AND FOR 1902.

AGES	1892-1901			1902		
	ATTACKS	DEATHS	CASE FATALITY PER CENT.	ATTACKS	DEATHS	CASE FATALITY PER CENT.
Under one year ...	265	55	20·8	26	5	19·2
1 to 2 years ...	807	143	17·7	70	12	17·1
2 to 3 ,, ...	1,432	205	14·3	159	30	18·9
3 to 4 ,, ...	1,968	235	11·9	181	22	12·2
4 to 5 ,, ...	2,152	190	8·8	242	29	12·0
5 to 6 ,, ...	2,107	109	5·2	237	9	3·8
6 to 7 ,, ...	1,858	78	4·2	259	10	3·9
7 to 8 ,, ...	1,662	58	3·5	221	5	2·3
8 to 9 ,, ...	1,326	24	1·8	165	5	3·0
9 to 10 ,, ...	1,132	19	1·7	120	4	3·3
10 to 15 ,, ...	3,268	56	1·7	390	5	1·3
15 to 20 ,, ...	1,018	26	2·6	115	3	2·6
20 to 25 ,, ...	472	11	2·3	43	0	...
25 to 35 ,, ...	375	7	1·9	45	2	4·4
35 to 45 ,, ...	97	3	3·1	7	0	...
Over 45 ,, ...	37	1	2·7	2	0	...
All Ages	19,976	1,220	6·1	2,282	141	6·2

TABLE 5.

SCARLET FEVER MORTALITY, 1902.—RATE PER 1000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1897	1898	1899	1900	1901	Mean	1902
England and Wales............	0·15	0·11	0·12	0·11	0·13	**0·12**	0·19
*76 Great Towns	0·18	0·14	0·13	0·13	0·17	**0·15**	0·19
London............................	0·18	0·13	0·09	0·08	0·13	**0·12**	0·12
Manchester City............	0·23	0·12	0·08	0·19	0·23	**0·17**	0·27
Manchester Township	0·27	0·11	0·08	0·16	0·24	**0·17**	0·21
North Manchester	0·29	0·12	0·09	0·24	0·25	**0·20**	0·31
South Manchester	0·17	0·12	0·09	0·18	0·22	**0·16**	0·26
*103 Smaller Towns	0·15	0·10	0·12	0·12	0·14	**0·13**	0·14
Rural Districts..................	0·12	0·09	0·10	0·10	0·10	**0·10**	0·10

*The rates for 1901 and previous years are for the 33 Great Towns and 67 Smaller Towns.

Two questions relating to Scarlet Fever which are of great interest from the administrative point of view can only be elucidated by an analysis of the circumstances of each case, viz., the influence of isolation in hospital, and the occurrence of return cases.

With regard to the former, I gave, in the Annual Report for 1891, an exhaustive analysis of particulars relating to the cases occurring in that year, from which it appeared that the evidence favours the view that the hospital is instrumental in diminishing the incidence of the disease. I do not propose, this year, to repeat that analysis on account of the pressure of other work.

Similarly, the usual particulars relating to return cases are omitted. It was discovered that infection had probably occurred owing to the imperfect use of the disinfecting apparatus on discharge, a fact which clouds the issues.

On referring to Table 1 it will be seen that the usual autumnal rise of Scarlet Fever is well marked.

In the Report for 1901 I have remarked that there is some ground for thinking that the infection of Scarlet Fever may be reinforced in the soil in certain seasons, though direct infection plays a large, and may play a dominating, part in determining seasonal incidence.

It is permissible to suspect that there may be no growth outside the body, but that flies or some other medium of communication may be more active in one year than another.

As regards flies, they were remarkable in 1902 by their scarcity; and as the autumnal rise is very marked, it would seem as if the history of the year depreciated this hypothetic cause of the spread of the disease, so far as Scarlet Fever is concerned.

The total incidence of the disease in 1902 was heavy, though lighter than in 1900 or 1901.

It was heavier in North Manchester than in either South Manchester or the Manchester Township.

Table 3 possesses interest in connection with the question of the influence of isolation in hospital.

If the removal to hospital leads to an increased incidence of the disease, it is certainly remarkable that the rate of incidence of the disease is smallest in the three districts which show the highest percentage of removals to the Hospitals.

There is, at the same time, a tendency for the districts having the lowest rates of incidence to have the highest fatality rates, that is to say, the largest number of deaths per 100 cases removed.

This may be supposed to imply to some extent defects in notification; to some extent only, since a high fatality depends also in part on the vigour of the young population of the district, in part also on the type of disease prevailing in the district during the year.

Even allowing for the maximum influence due to variations in notification, it could still be affirmed that the highest percentage of removals coincided with the lowest incidence of the disease.

That the calibre of the population has to do with the high fatality may be inferred as probable from the fact that the Manchester Township shows for the ten years 1891–1900 a much higher case fatality than North Manchester or South Manchester.

During the ten years, the highest case fatality is exhibited by the Ancoats and Central Districts in the Manchester Township, by Bradford and Beswick in North Manchester, and by Ardwick and Hulme in South Manchester.

In 1902 the highest case fatality is shown in the Ancoats and Central Districts of the Manchester Township, in Newton Heath and Beswick in North Manchester, and in Ardwick and Hulme in South Manchester.

From Table 4 we see that the fatality of Scarlet Fever diminishes from infancy up to the age of 10, a strong argument for using every means to avert the infection of infants. There seems to be no doubt that very young children are less susceptible to the infection, and that removal of the first cases helps to reduce the danger of these being attacked.

Manchester is seen in Table 5 to have on the average a higher death-rate than London or the country generally from Scarlet Fever. To some extent this is explained by the higher birth-rate of the City.

DIPHTHERIA.

Their is but little change in the aggregate incidence of Diphtheria in 1902, a slight diminution being manifest as compared with 1901, though both these years show an increased incidence as compared with other recent years. In this disease slight cases play an extremely important part, and it is probable also that the disease is propagated by those who are much in contact with cases of Diphtheria, even when they do not themselves suffer, unless the greatest care is exercised.

It is very liable to attack cases of Scarlet Fever, and to manifest itself chiefly as a nasal catarrh, hence the utmost vigilance has to be exercised in the Fever Hospital, and there is no doubt that at Monsall very great care is exercised in this respect.

The seasonal incidence varies considerably, unlike that of Scarlet Fever, which is generally the heaviest in the fourth quarter of the year. There is a tendency manifested in the same direction, but this may possibly be due .ot the difficulty of distinguishing between these two diseases.

The highest fatality is in the first year of life, and the proportion of cases dying diminishes as age advances.

With regard to the districts of the City in which the disease is most prevalent, those having the highest attack rate per thousand living were, in 1902, in descending order, Rusholme, Crumpsall, Cheetham, Clayton, West Gorton, Central; in 1901, Harpurhey, Blackley, Cheetham, Bradford, Moston, Beswick; in 1900, Cheetham and Crumpsall.

In 1899, Clayton, Crumpsall, Moston, Rusholme, Newton Heath.

There is thus manifested a tendency for the disease to persist in certain districts, viz.:—Cheetham and Crumpsall, but the incidence from year to year is most variable, and appears to be determined by what I have called a flare-up, depending on special outbursts of infection.

The distribution of the disease is shown by the following table on page 49, giving for the different districts the number of cases month by month, with the details of Bacteriological examination.

This table shows very clearly this habit of Diphtheria of rushing up in particular districts, nor is there any seasonal influence at work, since these heavy incidences occur irrespective of the period of the year. They are determined, perhaps by the occurrence of the disease in a school, or by some other influences favourable to infection from person to person.

The same tendency to flare-up in the different districts was manifested in 1902.

The precise manner in which the disease has spread has not always been traced; but schools have certainly played an important part in these outbreaks.

The nature of these increases, irrespective of season, in a variety of districts, can hardly be doubted. They are due, in all probability, to personal infection, as certainly as limited extensions of Smallpox are.

1902.—DIPHTHERIA ATTACKS ARRANGED IN MONTHS. *

	STATISTICAL DIVISIONS	January			February			March			April			May			June			July		
		+	−	○	+	−	○	+	−	○	+	−	○	+	−	○	+	−	○	+	−	○
	City of Manchester	19	8	4	15	9	3	32	7	6	17	3	3	19	4	5	14	1	3	29	3	4
	I.—Manchester Township	8	2	1	3	2	1	7	2	2	1	...	2	4	3	2	1	...	1	3	...	...
	II.—North Manchester	5	4	1	6	3	1	18	4	1	4	1	1	1	...	..	9	...	1	9	...	1
	III.—South Manchester	6	2	2	6	4	1	7	1	3	12	2	...	14	1	3	4	1	1	17	3	3
I.	Ancoats	2	...	1	1	1	1	3	1	...	...	...	...	1	...	...	...	...	1	1	...	...
	Central	3	1	...	2	1	...	3	...	1	1	...	2	1	3	2	...	...	...	1	...	...
	St. George's	3	1	...	...	...	...	1	1	1	...	...	...	2	...	...	1	...	...	1	...	...
II.	Cheetham	3	1	...	3	2	1	9	1	1	...	1	...	1	...	...	6	...	1	...	...	...
	Crumpsall	1	2	...	...	...	...	1	...	...	...	...	...	...	...	...	2	...	...	3	...	...
	Blackley	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
	Harpurhey	1	1	...	...	1	...	3	...	...	...	...	...	...	...	...	...	...	...	2	...	...
	Moston	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
	Newton	...	...	...	2	...	...	...	2	...	1	...	...	...	...	...	...	...	...	1	...	1
	Bradford	...	...	...	...	...	...	3	1	...	...	...	...	...	...	...	...	...	...	2	...	...
	Beswick	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Clayton	...	...	...	1	...	...	1	...	...	3	...	...	...	...	...	1	...	...	...	...	...
III.	Ardwick	...	...	1	...	...	...	1	...	1	2	...	...	2	...	...	...	...	...	3	...	...
	Openshaw	2	...	...	4	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
	West Gorton	...	1	...	...	1	...	4	1	...	1	...	...	...	...	1	...	...	...	3	...	1
	Rusholme and Kirk.	...	...	...	2	2	1	...	...	...	...	1	...	4	...	...	1	1	1	6	...	1
	Chorlton-on-Medlock	1	...	...	...	1	...	2	...	1	2	1	...	3	1	...	1	...	...	5	3	1
	Hulme	3	1	1	...	...	...	..	...	1	6	...	...	5	...	2	2	...	...	...	...	...

* + Indicates that the swabs revealed diphtheria bacilli. − That they did not do so. ○ That no examination was made.

1902.—DIPHTHERIA ATTACKS ARRANGED IN MONTHS *—*continued.*

STATISTICAL DIVISIONS		August			September			October			November			December			Totals		
		+	–	○	+	–	○	+	–	○	+	–	○	+	–	○	+	–	○
City of Manchester		**17**	**11**	...	**41**	**6**	**2**	**20**	**5**	**4**	**36**	**6**	**1**	**21**	...	**6**	**280**	**63**	**41**
	I.—Manchester Township	5	1	...	6	2	...	2	...	...	6	...	...	4	...	1	50	12	10
	II.—North Manchester	6	1	...	9	...	1	5	1	...	9	5	...	6	...	...	87	19	7
	III.—South Manchester	6	9	...	26	4	1	13	4	4	21	1	1	11	...	5	143	32	24
I.	Ancoats	2	...	...	3	...	...	...	...	...	3	...	...	1	...	1	17	2	4
	Central	1	...	...	2	2	...	2	...	...	...	...	...	2	...	...	18	7	5
	St. George's	2	1	...	1	...	...	...	...	...	3	...	...	1	...	...	15	3	1
II.	Cheetham	3	...	...	3	...	1	2	1	...	2	2	...	1	...	...	33	8	4
	Crumpsall	...	...	...	1	...	...	1	...	...	...	...	...	1	...	...	10	2	...
	Blackley	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	2	...	2
	Harpurhey	2	...	...	1	...	...	...	...	...	1	1	...	...	...	...	10	3	...
	Moston	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	2	...	...
	Newton	1	1	...	1	...	...	...	...	...	...	1	...	...	...	...	6	4	1
	Bradford	...	...	...	...	...	...	2	...	...	3	...	...	1	...	...	11	1	...
	Beswick	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	2	1	...
	Clayton	...	...	...	2	...	...	...	...	...	1	...	...	2	...	...	11	...	...
III.	Ardwick	2	2	...	9	2	...	6	1	2	3	...	...	...	...	...	28	5	4
	Openshaw	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	9	1	...
	West Gorton	3	1	...	9	1	...	2	1	2	1	1	...	...	...	...	23	7	4
	Rusholme and Kirkmanshulme	...	...	...	1	...	...	...	1	...	7	...	...	6	...	1	27	5	4
	Chorlton-on-Medlock	1	2	...	3	...	...	3	...	...	3	...	...	2	...	3	26	8	5
	Hulme	...	4	...	2	...	1	2	1	...	7	...	1	3	...	1	30	6	7

* + Indicates that the swabs revealed diphtheria bacilli. – That they did not do so. ○ That no examination was made.

The following are the tables relating to Diphtheria and Membranous Croup during the year 1902:—

DIPHTHERIA, MEMB. CROUP, 1902.—ATTACKS IN WEEKS, ACCORDING TO DATE OF ONSET.

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER	
Jan. 4	9	April 5	4	July 5	8	Oct. 4	12
,, 11	4	,, 12	5	,, 12	13	,, 11	5
,, 18	10	,, 19	9	,, 19	8	,, 18	7
,, 25	10	,, 26	4	,, 26	6	,, 25	10
Feb. 1	4	May 3	5	Aug. 2	4	Nov. 1	6
,, 8	6	,, 10	5	,, 9	4	,, 8	6
,, 15	8	,, 17	9	,, 16	6	,, 15	13
,, 22	11	,, 24	7	,, 23	8	,, 22	17
Mch. 1	10	,, 31	4	,, 30	9	,, 29	8
,, 8	15	June 7	7	Sept. 6	11	Dec. 6	6
,, 15	15	,, 14	3	,, 13	10	,, 13	8
,, 22	7	,, 21	5	,, 20	8	,, 20	9
,, 29	7	,, 28	5	,, 27	16	,, 27	9
						Jan. 3	7
Total...	116	Total...	72	Total...	111	Total...	123

City total, 422.

DIPHTHERIA AND MEMB. CROUP ATTACKS, 1902.—RATES PER 1000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1897	1898	1899	1900	1901	Mean	1902
Twelve Notification Towns ...	0·58	0·85	2·06	1·89	1·67	**1·41**	1·51
City of Manchester	0·29	0·36	0·45	0·62	0·84	**0·51**	0·77
Manchester Township.........	0·22	0·20	0·31	0·34	0·58	**0·33**	0·61
North Manchester	0·37	0·70	0·81	1·14	1·10	**0·82**	0·78
South Manchester	0·26	0·26	0·33	0·44	0·79	**0·42**	0·84

Diphtheria, Memb. Croup, 1902.—Number of Attacks, of Deaths, and Case Fatality at Different Ages, for the Ten Years 1892-1901, and for 1902.

	1892-1901			1902		
Ages	Attacks	Deaths	Case Fatality*	Attacks	Deaths	Case Fatality*
Under one year ...	116	83	71·6	9	6	66 7
1 to 2 years ...	298	191	64·1	34	10	29·4
2 to 3 ,, ...	320	186	58·1	42	16	38.1
3 to 4 ,, ...	395	178	45·1	54	23	42·6
4 to 5 ,, ...	359	132	36·8	57	25	43·9
5 to 6 ,, ...	282	105	37·2	44	12	27·3
6 to 7 ,, ...	189	55	29·1	32	11	34·4
7 to 8 ,, ...	165	37	22·4	28	7	25·0
8 to 9 ,, ...	130	26	20·0	16	5	31·3
9 to 10 ,, ...	118	15	12·7	17	2	11·8
10 to 15 ,, ...	346	23	6·6	36	4	11·1
15 to 20 ,, ...	266	13	4·9	15	...	...
20 to 25 ,, ...	217	5	2·3	15	1	6·7
25 to 35 ,, ...	274	11	4·0	17	1	5·9
35 to 45 ,, ...	128	3	2·3	6	1	16·7
Over 45 ,, ...	58	2	3·4	...	...	...
All ages	3661	1065	29·1	422	124	29·4

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* The percentages in this column are the actual proportions of fatal cases to the attacks at those ages.

DIPHTHERIA AND MEMBRANOUS CROUP, 1902.—ATTACKS IN DISTRICTS, WITH ATTACK RATE, CASE FATALITY PER CENT., AND REMOVALS TO HOSPITAL PER CENT.

DISTRICTS	ATTACKS	ATTACK RATE PER 1000 LIVING	† CASE FATALITY PER CENT.	REMOVALS TO HOSPITAL PER CENT.
Ancoats	26	0·58	42·3	73·1
Central..................	32	1·09	18·7	53·1
St. George's	23	0·39	34·8	65·2
Cheetham	48	1·26	14·6	72·9
Crumpsall	12	1·34	25·0	25·0
Blackley	4	0·44	75·0	25·0
Harpurhey	14	0·83	21·4	35·7
Moston	3	0·23	...	...
Newton Heath.........	18	0·49	44·5	38·9
Bradford	17	0·71	41·2	47·1
Beswick	4	0·34	25·0	50·0
Clayton	11	1·22	36·4	63·6
Ardwick	40	0·95	32·5	62·5
Openshaw	10	0·36	...	30·0
Gorton (West)	36	1·20	30·6	75·0
Rusholme and Kirk.	39	1·55	25·6	59·0
Chorlton-on-Medlock	43	0·75	27·9	62·8
Hulme	42	0·63	40·5	64·3
City of Manchester	**422**	**0·77**	**29·4**	**59·5**

† Corrected: the fatal cases are those actually occurring amongst the cases notified.

DIPHTHERIA, MEMB. CROUP MORTALITY, 1902.—RATE PER 1000 LIVING COMPARED WITH MEAN OF FIVE YEARS.

	1897	1898	1899	1900	1901	Mean	1902
England and Wales	0·24	0·24	0·29	0·27	0·27	**0·26**	0·23
*76 Great Towns	0·31	0·31	0·40	0·35	0·30	**0·33**	0·26
London	0·51	0·40	0·43	0·34	0·30	**0·40**	0·25
Manchester City............	0·08	0·09	0·16	0·19	0·24	**0·15**	0·22
Manchester Township	0·08	0·06	0·12	0·18	0·16	**0·12**	0·19
North Manchester	0·10	0·15	0·26	0·23	0·30	**0·21**	0·21
South Manchester	0·08	0·08	0·11	0·16	0·25	**0·14**	0·25
*103 Smaller Towns	0·24	0·28	0·28	0·29	0·28	**0·27**	0·24
Rural Districts	0·19	0·18	0·21	0·23	0·24	**0·21**	0·20

* The rates for 1901 and previous years are for the 33 Great Towns and 67 Smaller Towns.

Referring to the table given on page 49, the following increases in particular districts may be noted :—

In March an outbreak in Cheetham occurred in a public institution.

Another outbreak of six cases occurs in June in the same district. Of these, four were scholars in a particular school, in another case two members of the family attend the school, and the sixth case contracted the disease in the public institution mentioned above.

Eleven cases occur in Ardwick in September. Of these, two came from the infants' department of one school, and another case was infected from one of these, while nine came from the junior department of another school, and another case was infected from her sister who attended this department.

In October nine cases occurred in Ardwick. Of these, one attended the same department of the second school mentioned in the previous paragraph, and two members of the same family attended the first school in another instance. Of the remainder, however, three attended another school.

West Gorton.—In this district five cases occur in March, but, though there is some reason to connect three of them with one school, the evidence is insufficient. In September ten cases occur, and of these five are connected with one school. In October five cases occur, of whom two are connected with the same school.

Rusholme.—Here two marked increases occur, seven in July, and, again, 14 in November and December. Of these last five belong to one school.

At this point it will be of interest to note in which schools diphtheria was probably transferred from one scholar to another at the school. The following is the list of schools concerned :—

Duke Street Board School, Hulme.—April, May. Infants, 3 cases.

St. Chrysostom's School, Chorlton-upon-Medlock.—April, June, July. Girls, 1 case ; infants, 4 cases. In one of these no specimen was taken. The disease in this school spread very slowly.

St. Mark's School, Cheetham.—June. Mixed, 2 cases ; infants, 2 cases. In one of these no specimen was taken.

Ross Place Board School, Ardwick.—July and September. Boys, 1 case ; girls, 2 cases ; infants, 4 cases. Of these one gave a negative result, and one was not examined.

Wesleyan School, Longsight.—September, October. Mixed, 1 case ; infants, 3 cases. In one of these no specimen was taken.

St. Matthew's Board School, Ardwick.—September, October. Juniors, 3 cases; infants, 3 cases. One of these gave a negative result but was most probably a case of diphtheria.

Armitage Street Board School, Ardwick.—September, October. Girls, 5 cases; infants, 2 cases. Of these one gave a negative result but was most probably a case of diphtheria, and one case was not examined.

Bacteriological examinations of specimens from the throat of cases of diphtheria give most valuable information. It is true they are subject to serious drawbacks, unless taken at an early stage of the disease, while, if taken subsequent to treatment with antitoxin or with antiseptics, they are liable to give negative results, even when the case is one of diphtheria. Hence a certain proportion of these examinations must prove unreliable, that is to say we must fall back on the clinical diagnosis. On the other hand, a large number of cases are thus rejected, with the agreement of the medical practitioners, who would otherwise be sent to the hospital.

The total number of throats examined in 1902 was 896. Of these 384 were ultimately entered as cases of diphtheria, or 43 per cent.

Of the 384 cases entered in the books as diphtheria, 63 gave a negative reaction. But not by any means all of these must be regarded as genuine cases, even from the clinical point of view.

Of the 219 cases removed to Monsall 26 gave a negative reaction. I have enquired of Dr. Gordon what was his clinical diagnosis in respect of these 26.

He informs me that 7 of them must be regarded as not being diphtheria.

Of the remaining 165 cases who were treated at home an uncertain number give clear signs of not having been diphtheria.

It is usual to write, in regard to each negative case, to the medical practitioner reporting asking what in his opinion was the real nature of the illness. In two cases the medical practitioner accepted the bacteriological test, in four he did not answer. In case 107 there is a suspicion of scarlet fever; case 131 is very doubtful; case 165 is in the same position; case 239 was probably scarlet fever; case 240 is doubtful; cases 262 and 266 are doubtful; cases 294 and 304 may have been scarlet fever; case 332 was probably not diphtheria; case 344 was probably scarlet fever; case 355 was very doubtful; case 369 was possibly quinsy; cases 374 and 381 were probably scarlet fever.

Thus of the 34 negative cases treated at home, there is great doubt about 22 having been diphtheria.

Of the 63 swabs placed on the register as giving negative reactions, 24 were sent in by 10 medical practitioners, of whom 2 sent 3, and 1 sent 4 swabs. There remain, therefore, 39 cases from separate practitioners in whom the swabs gave negative results, which were, from the clinical point of view, probably cases of diphtheria.

The particulars of these bacteriological examinations are as under :—

BACTERIOLOGICAL EXAMINATIONS.

Total number of examinations made	Specimens collected by Medical Practitioners					Specimens Collected at Monsall Hospital												
	Positive	Negative—Medical Attendant adhered to his diagnosis	Negative—Medical Attendant accepted the diagnosis	Duplicate and control specimens		Positive	Negative—Diagnosed Diphtheria	Negative—Diagnosed as other diseases	Duplicate and control specimens		Post scarlatinal		Other diseases		Cases from outside districts		Monsall staff	
				Positive	Negative				Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
896	196	44	244	8	33	84	19	45	38	64	41	49	1	1	7	11	2	9

Of the 384 cases entered in the register as diphtheria, 219 were treated in Monsall Hospital and 165 at home.

I have made the following analysis of the cases of diphtheria, showing the fatality in the different groups :—

CASES GIVING A POSITIVE REACTION.

Removed to Monsall—Bacilli			Left at home or taken elsewhere—Bacilli		
Ordinary form	Short form	Doubtful	Ordinary form	Short form	Doubtful
157	14	7	86	9	7

Total, 280.

The corresponding deaths were :—

43	5	0	22	0	1

Total, 71.

CASES GIVING A NEGATIVE REACTION.

Removed to Monsall	Not Removed
26	37

Total, 63.

The corresponding deaths were :—

4	6

Total, 10.

Of the 26 negative cases treated in Monsall, in 3 the medical attendant is recorded as adhering to the diagnosis, in 14 no statement is made, and in 9 a negative result was obtained on two or more examinations being made.

Of the 37 negative cases treated at home, in 21 the medical attendant adheres to his diagnosis, in 11 no statement is made, and in 4 two or more examinations gave negative results.

CASES IN WHICH NO SPECIMEN WAS TAKEN.

Removed to Monsall	Not Removed
15	26

Total, 41.

The corresponding deaths were :—

8	15

Total, 23.

Total cases :—384.
Total deaths :—104.

Amongst cases not examined, the fatality at the hospital was 53 per cent.; amongst those treated at home, 58 per cent. These figures sufficiently illustrate these two points : (1) the necessity of promptly taking specimens for examination at the hospital should the patient be admitted without such an examination having been made, (2) the need of examining all cases if possible.

The bacteriological facts for Membranous Croup for 1902 are as follows:—The total number of cases notified was 35. Of these, 11 were submitted to bacteriological examination, of whom 6 gave positive and 5 negative results.

The number of deaths from Membranous Croup was 23. The number of cases treated in Monsall was 18, of whom 10 died.

The distribution in districts is shown in the following table :—

1902.—MEMBRANOUS CROUP ATTACKS.

STATISTICAL DIVISIONS.		+	−	○
City of Manchester		6	5	24
I.	Manchester Township	4	1	4
II.	North Manchester	...	2	13
III.	South Manchester	2	2	7
I.	Ancoats	2	...	1
	Central	1	...	1
	St. George's	1	1	2
II.	Cheetham	...	1	1
	Crumpsall	...	...	...
	Blackley	...	...	...
	Harpurhey	...	...	1
	Moston	...	...	...
	Newton	...	...	7
	Bradford	...	...	4
	Beswick	...	1	...
	Clayton	...	...	...
III.	Ardwick	1	...	2
	Openshaw	...	...	...
	West Gorton	...	1	...
	Rusholme and Kirkmanshulme	1	...	2
	Chorlton-upon-Medlock	...	...	3
	Hulme	...	1	...

On comparing this with the corresponding table for Diphtheria it will be seen that there is no correspondence between the incidence on districts of Membranous Croup and other forms of Diphtheria. The numbers, however, are small.

The following practical deductions may be drawn from these and previous statistics :—

1. A most essential requirement in connection with diphtheria is the early inoculation of antitoxin. All possible facilities are offered by the Hospitals Sub-Committee.

2. The importance from the point of view of prevention, of careful and accurate bacteriological examinations, especially in regard to cases in which the results are negative.
3. The great value of such examinations in saving the accumulation of unsuitable cases in Hospital.
4. The comparative safety of misdiagnosed cases in Hospital, owing to the immunity conferred by injections of antitoxin.
5. The fact that bacteriological diagnosis is less reliable than in the case of enteric fever for reasons which have been stated.
6. The tendency of diphtheria to flare-up in particular districts, probably owing largely to its propagation in school by overlooked slight cases.
7. The lower fatality of cases not showing evidence of the presence of diphtheria bacilli.
8. The necessity of additional means of examining the remaining children, when one case is attacked with pronounced diphtheria. This is probably the greatest need at present.

INSANITARY CONDITIONS.

At 107 houses in which one or more cases of diphtheria occurred, defects were reported by the Inspectors. These were, with few exceptions, such as to lead to the accumulation of foul organic liquids in the neighbourhood of the house. They comprise defective yard surfaces, defective drains, leaking pails, middens not emptied, slop pipes short, and so on. Such defects can at all events, produce catarrhal conditions, and so play an indirect part in the production of diphtheria.

It is notable that the cases of membranous croup, numbering 34, are in only two instances associated with damp conditions of a like nature.

From the point of view of prevention, the most important requirement, in the presence of diphtheria, is the examination of all contacts in the households and schools invaded. In any case showing the slightest signs of sore throat, swabs should be taken for bacteriological examination. It is evident that limits are imposed on this measure both by the expense incurred, and by the difficulty of getting Medical assistance for the work. Yet this is probably the direction in which a maximum of result is to be obtained.

BACTERIOLOGICAL EXAMINATIONS.

The following is an analysis of the work done for the Public Health Department by Professor Delépine during the year 1902 :—

NUMBER OF SAMPLES SUBMITTED FOR BACTERIOLOGICAL EXAMINATION.

	Positive	Negative	Doubtful	Special Examinations	
Diphtheria	372	510	14	Wine, beer, and brewing materials for arsenic	31
Enteric Fever	341	409	13		
Samples of milk taken from cans. Examined for tubercle bacilli	39	381	...	Condensed milk ...	3
				Water milk butter ...	3
Samples of milk taken from udders.	31	68	...	Testing disinfectors .	12
				Bread (4 loaves) ...	1
Samples of sputum, examined for tubercle bacilli	248	337	...	Other specials... ...	7
	1031	1705	27		57

It will be remembered that the method of serum diagnosis was much improved by him during the year 1897, and that this improvement has rendered it possible to make an accurate and rapid diagnosis of the nature of the illness in suspected cases of typhoid fever.

Then, again, in the examination of milk for the presence of tuberculous infection the methods of examination have been perfected by Professor Delépine.

In this way we owe to him not merely the security of skilful and reliable work, but the actual inception of the methods of examination pursued.

In regard to diphtheria and enteric fever, it has been considered desirable to have, as nearly as can be attained, all cases submitted to bacteriological examination. When this is done, the laboratory becomes, to a considerable extent, a portal for the hospital, and a considerable saving in hospital expenses results from the exclusion of many cases, which it is not necessary to treat in hospital.

The probable extent of such saving can only be estimated by considering the large number of cases in which the result of the bacteriological examination was negative, and was accepted by the medical practitioners.

For a summary of bacteriological work in connection with diphtheria and enteric fever, see pages 56 and 80.

In regard to diphtheria, it is fitting that some remarks should be made supplementary to the figures. In addition to the above determinations a very large number of examinations have been made by Dr. Gordon in his effort to prevent the spread of diphtheria in the hospital, and to avert the possibility of patients being discharged at too early a stage.

It falls, however, to the Public Health Department to determine what patients are to be left at home, and which are to be removed to the Hospital, and a bacteriological examination which results in leaving the patient at home requires to be conducted with very great care. Further, a statement of the bacteriological condition is of the greatest assistance to practitioners in concluding their diagnosis, especially if they have confidence in the source from which the statement emanates.

Much annoyance to householders and considerable expense in the way of disinfection are often saved by a negative diagnosis, to which the bacteriological examination is a powerful assistance.

On the other hand, a considerable amount of inconvenience is willingly submitted to when it is certain that the case is one of Diphtheria.

It should here be observed, however, that every case presenting the appearance of Diphtheria should be at once submitted to antitoxin inoculation by the practitioner without waiting for the bacteriological results. But many cases are certain to be treated at home whether known to be Diphtheria with certainty or not, and in these cases a precise diagnosis arrived at as speedily as possible is of great value.

It is possible that some cases having Diphtheria Bacilli present in the throat and removed to Hospital were not actually cases of Diphtheria. Clinically this is of no great moment since these cases have antitoxin injected in large amounts and are thus rendered immune to infection. The important fact to be clear about is the absence of Diphtheria in cases in which no Diphtheria Bacilli are found.

Now, Diphtheria Bacilli may fail to grow from material taken from the throats of persons actually suffering from Diphtheria, for several reasons. The swab or rubbing may not have bean skilfully taken. The Bacilli may have been killed by the application of a disinfectant. The Bacilli may have disappeared from the throat if any delay has occurred in taking a swab, especially if the patient has been treated by injection of antitoxin.

From these causes the Bacteriological examination fails to reveal the true nature of the illness in a certain proportion of cases. The diagnosis is generally adhered to in these cases on clinical grounds. Were the diagnosis wrong in those cases in which the Bacteriological diagnosis is accepted by the Medical Attendant, in any material number of instances, we should have Diphtheria spreading in the family, an event which rarely occurs.

Having regard to the large number of persons kept at their own homes, through acceptance of the Bacteriological results, it would appear that there is a considerable saving in the cost of Hospital treatment to balance the expenditure on Bacteriological diagnosis.

The same observation applies to Enteric Fever, except that the clinical diagnosis is in closer accord with the Bacteriological than is the case with Diphtheria.

Apart from the restriction of the number of cases which it is necessary to treat in Hospital, it is no small gain to an accurate knowledge of the distribution of Enteric Fever and Diphtheria to have a reliable test of the actual occurrence of the disease, and this is absolutely necessary as a basis of any reasoning as to the modes of spread of these diseases. But the full value of a Public Health Institute, in its Bacteriological relations, can only be gauged when we are threatened by an invasion of devastating foreign diseases like Asiatic Cholera and Plague. It is worth recalling that, amongst the earliest cases of Asiatic Cholera definitely diagnosed in 1893 were 4 in Manchester determined by Professor Delépine from Bacteriological examination.

Again in 1900, when plague had actually invaded Glasgow, Professor Delépine, at great expenditure of time and work, placed himself in a position to undertake any examination which he might be called on by the community to undertake.

These investigations require much labour, forethought, and skill, and are not the less valuable when, as in the case af plague, they are fortunately not actually called into requisition.

On various occasions Professor Delépine has very successfully investigated outbreaks of severe illness and diarrhœa. One of these was an extensive occurrence of acute illness from milk in Victoria Park in 1894, which he was inclined to attribute to an organism of the Colon group. A similar organism was found in the blood of a large proportion of the guinea pigs which died rapidly in consequence of inoculation of the milk supplied to towns. In 1902 occurred an extensive outbreak of illness, with one fatal case, from the consumption of pork pies made in Derby. This outbreak Professor Delépine, with the aid of the Medical Officer of Health of Derby, believed himself to have traced to fæcal contamination in the place in which the animals were killed and hung.

These and other investigations have tended, in his opinion, to draw special attention to a micro-organism closely allied to the bacillus of Gaertuer, which he is inclined to regard as the most probable source of summer diarrhœa.

If this view can be conclusively settled, a splendid addition will have been made to the weapons of preventive medicine, and it is desirable that every facility should be afforded to him of bringing his labours on this point to a successful and decisive conclusion.

Practical work of the highest value has come from the bacteriological laboratory of Owens College in reference to our milk supplies. It would have been impossible to construct a working scheme for dealing with milk from tuberculous udders had it not been that Professor Delépine had elaborated a method of rapidly and successfully demonstrating the presence of tubercle bacilli in milk, by inoculation in the leg of the guinea pig.

In the course of his examinations of samples of milk, moreover, he has shown that primary requisites of a good milk supply are rapid delivery, and where this cannot be attained, cleanliness and coolness.

His researches or those conducted under his supervision into tuberculosis have been of the greatest practical value. They have demonstrated the possibility of an insidious invasion by the alimentary tract. Dr. Coates' research, carried out under his guidance, has also confirmed, in a striking manner, the conclusions arrived at by Cornet in reference to the infection of phthisis arising from houses or premises occupied by careless consumptives.

But there are directions in which further research and further practical action are needed. The micro-organism of scarlet fever is now being hunted down, and the researches of Dr. Klein and Dr. M. H. Gordon have opened up a field for inquiry which promises to be fruitful.

Practical examinations of tinned foods, by bacteriological methods, such as those carried out in Liverpool, may be properly considered, and have to some extent been carried on during this year.

Valuable researches on the contamination of shell fish by sewage pollution have been carried out by Dr. Klein and by Professor Boyce and Dr. Herdman, of Liverpool.

Much of our knowledge of the outburst of arsenical poisoning, in 1901-1902, is in reality due to Professor Delépine, and the subject promises again to occupy attention, though in a less acute form.

Professor Delépine has done very valuable work in connection with the contamination of water supplies, and he is at the present time engaged on an investigation of the air of sewers for the Rivers Department.

It is sufficient to indicate the many directions in which bacteriological research of an accurate and scientific character approaches public health questions, to show how necessary it is that in connection with the public health work of the Corporation, there should be a bacteriological institute under the guidance of an able and experienced bacteriologist.

It may, however, still further emphasise the need for a well-equipped and well-endowed institute to mention that from the Annual Report of the Medical Officer of Health for Liverpool it appears that a considerable number of bacteriological examinations have been carried out for the Sanitary Authority on shell-fish, tinned foods, condensed milks, cheese, butter, margarine, sausages, pastes, and potted meats and preserves. It will be seen that the bacteriological laboratory has been extensively used for the investigation of the purity and safety of the food supplies.

It is to be hoped that the new Bacteriological Institute, under Professor Delépine's supervision, will be started in a financial position, which will enable him to conduct the various researches which he is anxious to undertake, or to prosecute more rapidly and completely, on various subjects having a practical bearing on public health.

ENTERIC FEVER.

The following are the tables referring to this disease :—

I.—Enteric Fever Attacks Reported in Quarters.

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
1891	173	119	180	289
1892	164	106	156	184
1893	108	80	220	210
1894	118	75	135	132
1895	110	90	100	193
1896	118	130	108	157
1897	97	57	137	212
1898	143	79	134	286
1899	101	66	104	110
1900	85	78	103	112
1901	43	43	149	124
1902	63	82	111	122

II.—ENTERIC FEVER ATTACKS IN WEEKS REPORTED IN 1902, ACCORDING TO DATE OF ONSET.

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER	
Jan. 4	3	April 5	8	July 5	7	Oct. 4	11
,, 11	3	,, 12	9	,, 12	3	,, 11	9
,, 18	3	,, 19	11	,, 19	4	,, 18	12
,, 25	6	,, 26	7	,, 26	9	,, 25	12
Feb. 1	5	May 3	2	Aug. 2	10	Nov. 1	10
,, 8	7	,, 10	4	,, 9	6	,, 8	3
,, 15	6	,, 17	4	,, 16	5	,, 15	10
,, 22	7	,, 24	4	,, 23	8	,, 22	5
Mch. 1	2	,, 31	3	,, 30	10	,, 29	14
,, 8	2	June 7	8	Sept. 6	7	Dec. 6	7
,, 15	5	,, 14	4	,, 13	5	,, 13	14
,, 22	7	,, 21	10	,, 20	17	,, 20	5
,, 29	7	,, 28	8	,, 27	20	,, 27 Jan. 3	4 6
Total...	63	Total...	82	Total...	111	Total...	122

City Total 378

III.—ENTERIC FEVER ATTACKS, 1902.—RATES PER 1000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1897	1898	1899	1900	1901	Mean	1902
Twelve Notification Towns...	1·32	1·53	1·60	1·12	1·26	**1·37**	1·01
City of Manchester	0·94	1·19	0·70	0·70	0·66	**0·84**	0·69
Manchester Township.........	0·81	1·29	0·77	0·65	0·65	**0·83**	0·80
North Manchester	0·97	1·42	0·73	0·80	0·77	**0·94**	0·85
South Manchester	0·99	0·99	0·64	0·65	0·58	**0·77**	0·52

IV.—-Enteric Fever, 1902.—Number of Attacks in Districts, with Attack Rate, Case Fatality per cent., and Removals to Hospital per cent.

Districts	Attacks	Attack Rate per 1,000 living	† Case Fatality per cent.	Removals to Hospital per cent.
Ancoats	32	0·72	6·2	78·1
Central	28	0·96	14·3	67·9
St. George's	47	0·79	21·3	87·2
Cheetham	12	0·32	16·7	50·0
Crumpsall	7	0·78	14·3	71·4
Blackley	2	0·22	...	50·0
Harpurhey	22	1·31	18·2	54·5
Moston	5	0·38	...	20·0
Newton Heath	36	0·98	11·1	69·4
Bradford	23	0·96	13·0	56·5
Beswick	22	1·86	13·6	90·9
Clayton	13	1·44	15·4	30·8
Ardwick	31	0·74	25·8	51·6
Openshaw	15	0·54	13·3	73·3
Gorton (West)	24	0·80	8·3	70·8
Rusholme and Kirk...	4	0·16	...	...
Chorlton-on-Medlock..	22	0·38	27·3	63·6
Hulme	33	0·49	33·3	72·7
City of Manchester.	**378**	**0·69**	**16·9**	**67·2**

† Corrected; the fatal cases are those actually occurring amongst the cases notified.

V.—Enteric Fever.—Number of Attacks, of Deaths, and Case Fatality per cent. at Different Ages, for the Ten Years 1892–1901, and for 1902.

Ages	1892-1901			1902		
	Attacks	Deaths	Case Fatality per cent.	Attacks	Deaths	Case Fatality per cent.
Under one year ...	5	3	60·0	1	...	...
1 to 2 years ...	25	7	28·0	1	...	...
2 to 3 " ...	45	5	11·1	3	...	...
3 to 4 " ...	87	12	13·8	2	...	...
4 to 5 " ...	121	13	10·7	6	1	16·7
5 to 6 " ...	130	16	12·3	10	...	...
6 to 7 " ...	124	14	11·3	6	...	...
7 to 8 " ...	129	12	9·3	8	1	12·5
8 to 9 " ...	135	10	7·4	12	1	8·3
9 to 10 " ...	129	13	10·1	6	1	16·7
10 to 15 " ...	752	85	11·3	47	7	14·9
15 to 20 " ...	866	166	19·2	58	7	12·1
20 to 25 " ...	776	154	19·8	70	17	24·3
25 to 35 " ...	919	227	24·7	89	13	14·6
35 to 45 " ...	434	135	31·1	39	9	23·1
Over 45 " ...	280	98	35·0	20	7	35·0
All ages	4957	970	19·6	378	64	16·9

VI.—Enteric Fever Mortality, 1902. Rate per 1000 living, Compared with Mean of Five Years.

	1897	1898	1899	1900	1901	Mean	1902
England and Wales	0·16	0·18	0·20	0·16	0·16	**0·17**	0·13
London	0·13	0·14	0·18	0·17	0·12	**0·15**	0·13
Dublin	0·58	0·49	0·55	0·38	0·32	**0·46**	0·33
City of Manchester	0·18	0·22	0·13	0·14	0·14	**0·16**	0·12
Manchester Township	0·17	0·25	0·15	0·14	0·16	**0·17**	0·12
North Manchester	0·20	0·24	0·11	0·14	0·13	**0·16**	0·11
South Manchester	0·17	0·19	0·14	0·14	0·13	**0·15**	0·12

In 1902 there were 378 cases of Enteric Fever notified, which is an increase of 19 as compared with last year.

The first half of the year was remarkably free from the disease, as only 63 and 82 cases were reported in each of the first two quarters. There was an increase in the third quarter, and in the fourth quarter also the disease was fairly prevalent.

The number of cases notified has been very constant during the last four years, from 1899–1902 inclusive (Table I.). The totals during those years are small compared with those of the years 1891, 1892, 1893, and 1898 considerably over 600 cases of Enteric Fever being reported in each of those years. This is, at least in part, due to the control exercised by bacteriological examination.

From the tables of the numbers of attacks reported in quarters given above, it will be observed that the number of cases reported in the first quarter always exceeds that reported in the second, excepting in the years 1896 and 1901; also that either to the third or the fourth quarter belongs the greatest number of cases reported in any one year.

It is well known that in the third quarter there is usually a very sudden rise in the number of deaths from Summer Diarrhœa, and that this is followed by a rise in the number of cases of Enteric Fever. The increase in the number of deaths from Summer Diarrhœa only lasts over a short period, whilst the increase in the number of Enteric cases, once established, is maintained, probably on account of the primary increase giving rise to a greater number of sources of infection than ordinarily exist.

In order to fix the date of the rise in the number of cases, it has been the custom to classify the cases in weeks, according to the date of onset.

The principal rise in 1902 will be seen from Table II. to occur in the week ending the 20th September.

It has been shown in previous reports that there is in most years a sudden rise in the number of cases of Enteric Fever occurring in any one week, and that this is generally associated with the occurrence of considerable rainfall from three to five weeks before, preceded and followed by a period of warm, dry weather.

The hypothesis which has seemed to explain this autumnal rise in the number of cases of Enteric Fever is as follows: Typhoid bacilli multiply in the soil under favourable conditions. Their growth is retarded by the presence of other organisms. In a prolonged period of drought the superficial layer of soil becomes partially sterilized. If this period of drought is followed by a heavy rainfall (the critical rainfall), the typhoid bacillus multiplies rapidly, and reaches the surface before the other organisms which hinder its growth have had time to prevent it If the critical rainfall be followed by a period of drought, colonies of bacilli are detached or removed from the surface, and, being carried by air currents or otherwise, give rise to infection.

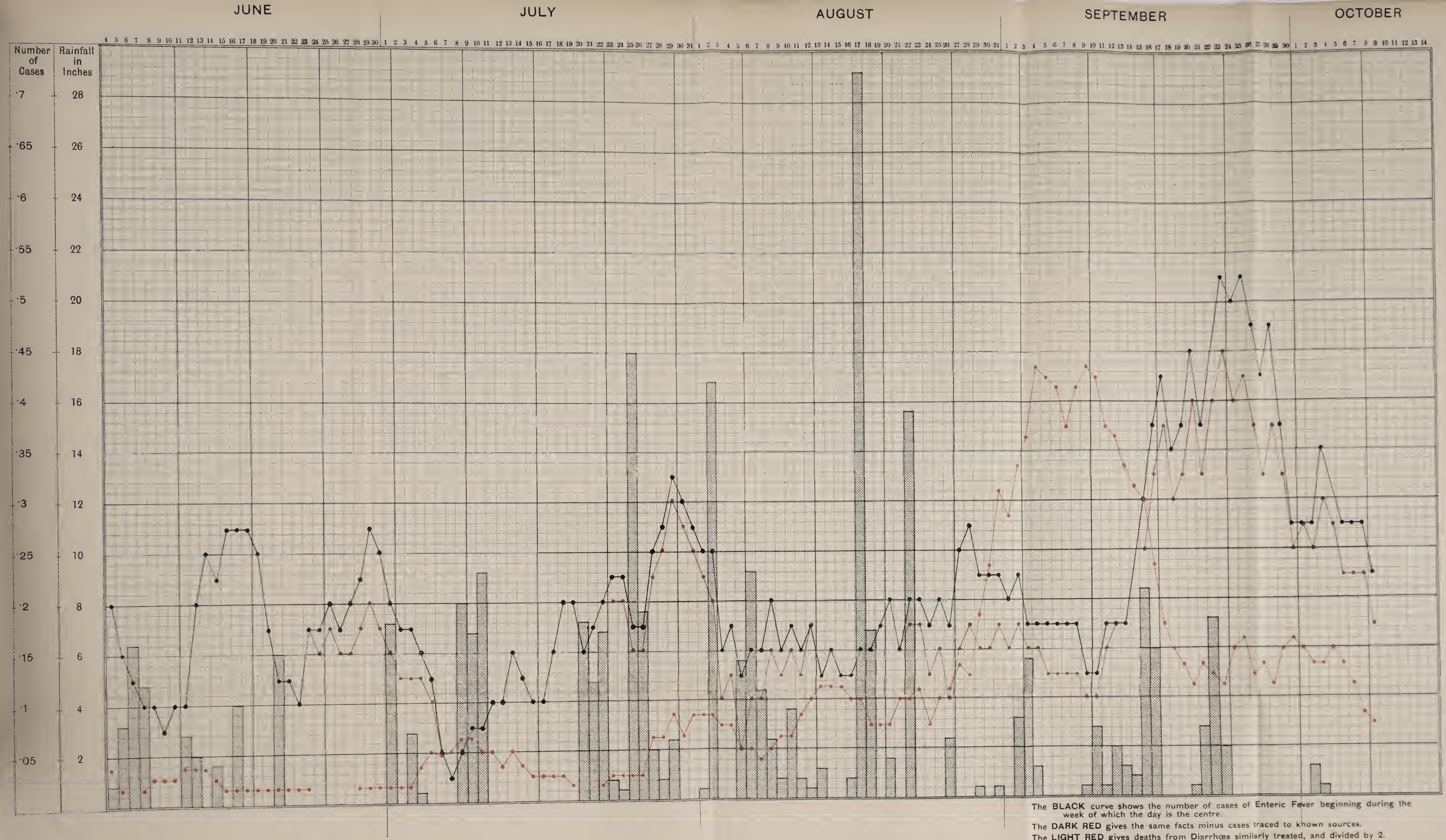
The facts for the year 1902 bearing on this hypothesis are given diagrammatically on the chart inserted. The curve of the number of Enteric cases is in black. A corrected curve, in dark red, gives the number of Enteric cases minus those who probably contracted the disease directly from patients with whom they were in contact, or contracted it outside Manchester. The bright red curve represents the Diarrhœa cases which died; only half the cases are represented. Seeing that the incubation period of Enteric Fever varies, it was thought better to give the numbers of cases having their onset in any week rather than on any day. The dates on the table represent the middle days of each week in regard to the number of (1) onsets of cases of Enteric Fever, and (2) onsets of cases which died from Diarrhœa.

Three rises in the Enteric curve reach their maximum points on the 29th July, 28th August, and 23rd September.

The rise reaching its maximum on the 29th July.—From the 21st to 30th June, inclusive, no rain fell. On the 1st July ·185 inches, and on the 3rd ·07 inches of rain fell. The four days following the 3rd were practically dry. Two points are against any marked rise in the curve resulting. The critical rainfall was slight, and the subsequent period of drought was short. The rise of the curve reaching its maximum on the 29th July is only a slight rise, as was to be expected.

The rise reaching its maximum on the 28th August may be disregarded, as the corrected curve shows no rise.

The rise reaching its maximum on the 23rd September.—From the 8th to the 16th August, inclusive, only ·264 inches of rain fell; the 14th and 15th



The BLACK curve shows the number of cases of Enteric Fever beginning during the week of which the day is the centre.

The DARK RED gives the same facts minus cases traced to known sources.

The LIGHT RED gives deaths from Diarrhœa similarly treated, and divided by 2.

were absolutely dry. This period was followed by a rainfall of ·73 inches on the 17th August, and ·175 inches on the 18th. In the remainder of the month the only heavy rainfall occurred on the 22nd August, when ·388 inches fell. The subsequent rise in the Enteric curve begins in the week the middle day of which is the 14th September, and reaches its maximum on the 23rd September. The last rise mentioned was the highest of the three above, and the preceding weather conditions approached most closely to those of the hypothesis. No important rise in the Diarrhœa curve occurs until the end of August. Its maximum is reached in the week the middle day of which is the 4th September, or 19 days before the Enteric Fever curve reaches its highest point. This year's facts agree with those of preceding years.

The attack rate per 1000 in Manchester in the last 5 years has always been lower than that in the twelve notification towns.

Table III.—The figure ·69 for 1902 is just over half the mean of the attack rate in these towns for the five years ending 1901.

Table IV., dealing with the prevalence in the various districts, shows over ·1 per cent. of attacks in the districts of Harpurhey, Beswick and Clayton. The Central, Newton Heath, and Bradford districts also give high percentage attack rates. Two of these districts lie in close proximity to valleys into which part of the City refuse is tipped.

The case fatality varies greatly in different districts, but the figures dealt with are small. The percentage figure for the City of Manchester is 16·9 at all ages for 1902, compared with 19·6 for 1892–1901 inclusive.

Table V., which classifies the attacks, deaths, and case fatality per cent. according to age periods (from 1892–1901) deals with 4,957 cases. The greatest number of attacks occur in the 25-35 age period. The case fatality per cent is at a minimum in the 8th year of life, and increases steadily in both directions.

The death-rate from Enteric Fever per 1000 living is ·12 in 1902 (Table VI.). In considering the significance of this figure it must be remembered that the figure representing the attack rate is small.

A list of Enteric cases in which direct infection is probable is given below. The chief points of interest are noted. The kind of privy and its relation to the house in which the infection occurred is recorded. The value of the serum reaction in the diagnosis of overlooked cases was found to be important (see cases 95, 300, 389).

Enteric Cases in 1902 in which Direct Infection is Probable.

Person Infected			Source of Infection	Interval in days between Onsets	Remarks
Case	Age	Sex			
11	42	m.	Cases 272, 344/01, were son and wife. These were both removed 18 days before onset of patient's illness	Son—75 days Wife—37 days	Rent 5/-, 5 rooms, 4 adults. W. C. adjoining
22	39	f.	Case 11/02's sister, to whom she acted as nurse	36 days	
24	15	f.	Case 23.—Father	17 days	Rent 5/10, 5 rooms, 7 adults, 1 child. W. C.
30	18	f.		10 days	
13	4	f.	Summary of Dr. Cowie's report on these cases: In one house, in a court: Case overlooked, died of enteric fever, 30th December, 1901. Case 13, f. 4, onset 9th January; to hospital, 20th January. Case 27, f. 21 months, onset, 4th February; to hospital, 11th February. Slept together Rent 3/-; 3 rooms; 3 adults, 1 child. Pail closet. Visitors at this house: Case 26, f. 25, onset 2nd February; to hospital, 10th February. Case 29, f. 30, onset 5th February; to hospital, 14th February. Case 35, f. 5, onset 14th February. Mother and daughter Case 32, f. 18, onset 14th February. (Possible origin, case 95, which probably infected cases 73, 74, and 88.) Case 32 lent sheets and cooking utensils to the family in the infecting house. She also wore a skirt which had been worn by case 26 at the beginning of February (the exact date unknown). All the houses in which these cases lived were dirty, except that of case 32, which was a C. L. H. Cases 26, 29, and 35 had dirty and defective pail closets, which were used in common. The pail closets of the infecting house were in a similar condition. The Widal reaction was positive in all those cases; in only one case (29) was it incomplete.		
26	25	f.			
27	21 months	f.			
29	30	f.			
32	18	f.			
35	5	f.			
36	13	m.	Father (case 39).	25 days	Patient slept with his father. Rent 5/-, 4 rooms, 4 adults, 4 children. Pail closet adjoining
37	8	m.	Brother (case 36) was removed to hospital on the 9th day of illness	14 days	The house is old, in bad repair, and is dirty. Rent 5/-, 4 rooms, 6 adults, 4 children. Pail closet adjoining
38	10	m.		20 days	
54	13	f.	Their mother (case 41) was removed to hospital on the 26th day of illness	40 days	Both daughters helped to nurse the mother before her removal. Rent 4/6, 4 rooms, 4 adults, 1 child. Pail closet adjoining
55	16	f.		41 days	

ENTERIC CASES IN 1902 IN WHICH DIRECT INFECTION IS PROBABLE—*continued.*

Person infected			Source of Infection	Interval in days between Onsets	Remarks
Case	Age	Sex			
58	26	f.	Nursed an Enteric patient for 21 days before the onset	(?)	Onset 13th March. Specimens for Widal reaction taken on the 18th and 21st March. Both were negative. The doctor adheres to his diagnosis. A later specimen would probably have given a positive reaction
69	52	f.	Nursed her son (case 43) for the last 6 weeks	41 days	Rent 4/9, 4 rooms, 6 adults. Midden
70	13	m.	Father had pains in stomach, Diarrhœa, and feverishness 3 weeks ago	21 days	No specimen was taken from the father by the medical attendant. This was asked for. House in bad repair. Drains in cellar and yard defective. Rent 5/6, 5 rooms, 5 adults, 3 children. Pail closet adjoining
73	17	m.	Case 95 (M. 2 years) son of case 88, slight case, proved by serum test	20 days	Cases 74 and 88 slept with case 95. Case 73 occupied same living rooms C.L.H.
74	44	m.		29 days	
88	30	f.		14 days	
95	2	m.	Case 32 lived in next house but one. Patient frequently taken into her house	21 days	Case 32 removed to Monsall Hospital 17 days before onset of illness in patient. Case 32's house. Rent 15/-, rooms sublet excepting 3, occupied by 3 adults and 3 children. Pail closet adjoining
98	26	f.	Patient nurse to an Enteric case for some time before onset	(?)	
105	38	f.	Frequently visited the house of an Enteric patient (case 84). Pail closet adjoining	16 days	Uses a public pail closet in bad condition
108	7	m.	Brother (case 83)	21 days	Rent 4/6, 4 rooms, 4 adults, 5 children. Midden 8 feet distant
115	13	m.		16 days	
156	14	f.	Brother (case 146)	15 days	Rent 6/-, 6 rooms, 5 adults. Pail closet 7 feet distant.
163	14	f.	Lived in same house as 3 Enteric patients before coming to Manchester	(?)	(?)
187	23	f.	Nursed her brother (case 161)	41	Rent 6/-, 6 rooms, 3 adults. W.C.

ENTERIC CASES IN 1902 IN WHICH DIRECT INFECTION IS PROBABLE—*continued.*

Person infected			Source of Infection	Interval in days between Onsets	Remarks
Case	Age	Sex			
194	21	f.	Brother (case ?) removed to hospital 4 days before onset	(?)	Widal reaction negative. No reply to letter asking if the medical attendant adhered to his diagnosis.
212	38	f.	Was nursing Enteric Fever cases when she took ill (Crumpsall)	(?)	
216	19	f.	Nursed brother (case 195)	25 days	Rent 5/10, 6 rooms, 6 adults, 2 children. W.C.
			Summary of Dr. Cowie's report on cases 226-230 inclusive and Sanitary Inspector's report on subsequent cases :— Case 226 was regarded as Influenza, a negative Widal reaction during the first week of illness having evidently convinced the medical attendant that it was not Typhoid Fever.		
227	44	f.	Case 227, the mother of case 226, nursed him. The interval between the onsets was 32 days. Both the above cases remained at home. Cases 228, 229, 230, 282, 283, and 296, sons and daughters of case 227, continued to live in the same house, and were infected. If they were infected by their brother (case 226) the intervals between the onsets in infecting and infected cases were 61, 65, 75, 92, 105, and 112 days. The possibility remains of infection from their mother or from each other.		
228	21	f.			
229	13	f.			
230	15	m.			
282	10	m.			
283	7	f.			
284	35	f.			
296	4	m.			
			Case 284, an aunt, took Enteric Fever 103 days after the onset in case 226. This aunt assisted in nursing the former cases, but did not live overnight in their house. The house was clean and in good repair. Rental 6/3, 6 rooms, 10 inmates. W. C. adjoining.		
233	15	f.	Slept in the same bed with her sister (case 209)	19 days	Case 209 removed to hospital 7 days before onset in the patient. Rent 5/3, 4 rooms, 4 adults, 1 child. W.C.
			ONSETS		
258	6	f.	18th September		These cases occurred in one house. The mother was ill for some days (? how many) with violent headache before the onset in the children. No specimen of blood was taken from her. The specimens from her four children all gave a positive Widal reaction.
239	2	m.	18th September		
260	10	m.	25th September		
261	9	f.	26th September		
			House clean, good repair. Rental 10/-; rooms 6; inmates 6. Pail closet adjoining.		
274	19	f.	Patient avoided her brother (case 223), who was nursed at home by the mother	24 days	Rent 5/-, 4 rooms, 5 adults, 1 child. W.C.
288	30	f.	Case 300 husband, overlooked, proved by Widal reaction.	9 days. Dates of onset rather uncertain	Rent 12/-, 4 rooms, 2 adults, 1 child. Pail closet 3 feet distant

Enteric Cases in 1902 in which Direct Infection is Probable—*continued.*

Person infected			Source of Infection	Interval in days between Onsets	Remarks
Case	Age	Sex			
295	22	f.	Case 275 sister	11 days	Rent 17/-, 7 rooms, 6 adults. W.C. adjoining
305	9	f.	Case 304 mother, with whom she slept	22 days	Rent 6/-, 5 rooms, 3 adults, 3 children. W.C. adjoining
321	32	m	Case 317 wife	10 days	He had not slept with his wife for about 17 days before onset Rent 5/6, 4 rooms, 3 adults, 2 children. Pail closet adjoining
331	14	f.	Case 214 mother, removed to hospital 22 days before the reported onset	40 days	The house is in bad repair, and damp Rent 5/9, 4 rooms, 5 adults, 4 children. Pail closet adjoining
341	11	m.	Case 254 mother, still in bed. Frequently has had grapes from the sick room. He does not sleep in the same house, but visits it frequently	54 days	Rent 7/6, 6 rooms, 6 adults, 1 child. W.C. adjoining
353	11	m.	Case 316 a lodger in front room of house. Patient was only one who had access to this room	26 days	Case 316 removed to hospital 14 days before onset in patient Rent 5/9, 4 rooms, 5 adults, 2 children. Pail closet adjoining
361	34	f.	Case 363. F. 8. Daughter took ill 14 days before case 364, and 18 days before case 365. Cases 361 and 362 may have been infected from any of the above cases. The intervals of onset between case 363 and cases 361 and 362 are 44 and 42 days. The house was dirty. Rental, 5/-. Rooms, 4. Inmates, 6. Water-closet adjoining.		
362	44	m.			
364	5	f.			
365	3	m.			
381	4	f.	Case 368 brother	17 days	Midden defective. Yard in a bad condition. Nuisance caused near house by night-soilmen emptying contents from middens on to the street before the carts came Rent 7/-, 4 rooms, 3 adults, 1 child
387	19	m.	Case 389 sister, overlooked, proved by Widal Reaction	9 days	
388	5	f.	…………	14 days	Rent 5/-, 4 rooms, 3 adults, 3 children

The following cases were infected outside Manchester :—

Case	Where Infected	Remarks
79	Mediterranean	Took ill 3 weeks before his discharge from his ship.
130	Blackpool	On holiday there up to 9th day before onset.
136	Tramp	No fixed place of abode. History not obtained.
163	Liverpool	Lived there with sister who had Enteric Fever.
195	Blackpool	Took ill after staying a fortnight there.
220	Southport	From 15th to 11th day before the day of onset lived there

In 33 cases there is a history of ice cream eating. In a majority of these cases it was taken frequently.

Shellfish and Enteric Fever.—Special attention was directed to this subject in the Annual Report for 1898. Mention is made of the Connecticut and Brightlingsea epidemics. Evidence supplied by Drs. Jasper Anderson and Newsholme is referred to; also Dr. Bulstrode's important report to the Local Government Board. Since that time much work has been done. The following statements are useful from a practical point of view :—

(1) Typhoid bacilli continue to live in pure sea-water for at least 3 weeks. A suitable current from a sewage outlet might lead to specific pollution of oyster beds at a considerable distance.

(2) Oysters receive Typhoid bacilli within their shells. Infected oysters (and presumably mussels) if placed in pure sea-water rid themselves of harmful bacilli in from 1–8 days (Mosny, "Public Health," January, 1901). This statement does not apply to cockles, in which Typhoid bacilli remain and multiply, although they are placed in pure sea-water (Hewlitt, "Journal of State Medicine," March, 1903).

(3) The presence of colon bacilli in shellfish proves sewage contamination, as they are not found in oysters from uncontaminated sources. Experienced bacteriologists frequently fail to find colon bacilli in oysters from sources where sewage pollution exists in high degree; bacteriologists therefore cannot prove the safety of any supply.

(4) The process of cooking oysters, or rather of killing oysters suddenly by applying a temperature of 212° F. to one of their shells, can have little effect in killing organisms within their shells.

Information collected in Manchester.—It has been stated that on an average 250 cwts. of shellfish are used daily in Manchester. Out of 1354 houses occupied mainly by artisans which were visited by Sanitary Inspectors, in 384 shellfish were used during 1902. The percentage number of cases associated with shellfish consumption from 1897–1902 inclusive are given below, but no attempt is here made to reject cases on account of vagueness of statement or for other reasons, though cases are excluded which did not give a Widal reaction :—

Year	1897	1898	1899	1900	1901	1902
Percentage	7.9	11.5	9.1	9.9	11.4	12.1

TABLE SHOWING THE WEEK IN WHICH RISES OCCURRED IN THE NUMBER OF ALL CASES OF ENTERIC FEVER, AND IN THE NUMBER OF CASES ASSOCIATED WITH THE CONSUMPTION OF SHELLFISH :—

	Dates of ends of weeks in which a rise in the numbers of cases occurred			
	1897	1898	1901	1902
(1) Enteric cases	28th Aug.	3rd Sept.	3rd Aug.	20th Sept.
(2) In cases associated with shellfish	9th Oct.	17th Sept.	21st Sept.	27th Sept.

In 1899 and 1900 no marked rise in shellfish cases occurred.

It is evident that there is no direct causal relationship between the rise in the number of Enteric cases in Manchester and the rise in the number of shellfish cases.

The dates of the shellfish rises are at later dates than would be expected for the Enteric rise for most localities in England and Wales. The autumnal rise in Enteric cases no doubt leads to the specific pollution of many shellfish layings, and is a direct cause of the rise in the number of Enteric cases associated with shellfish.

Duplicate occurrences of infection by shellfish have been noted in the Annual Reports. Below a table is given of the cases occurring in 1902. It will be observed that several cases arose from the source "A." Several cases have occurred in previous years, throwing strong suspicion on this source.

We may expect that, as the result of the inquiries of the Royal Commission on Sewage Disposal, legislation will ensue leading to the suppression of the dangerous pollution which at present affects not a few of our shellfish layings, though it is not possible to forecast the form which such legislation is most likely to take, but it may be regarded as certain that the dealers in shellfish and the public are both anxious that it should be effective and speedy.

Case	Age	Sex	Variety—Raw or cooked	Date of Onset	Interval in days	Others partaking at the same time	Remarks
1	27	f.	Raw oysters	11th Dec.	7 days	Husband	Serum test incomplete
6	43	f.	Raw oysters	19th Dec./01.	49 days (?)	No others	Serum test negative. Patient died on 11th Jan./02
12	6	f.	Raw and cooked mussels	28th Dec./01.	Dates uncertain	Father had a few raw	
14	17	f.	Cooked mussels	6th Jan./02.	9	Father	
16	27	m.	Raw shellfish	15th Jan.	4	No others	
20	22	m.	Cooked mussels	29th Jan.	16	?	Patient died 17th February
21	26	m.	Raw mussels	23rd Jan.	8	No others	
26	25	f.	Cooked mussels	2nd Feb.	8	No others	There is the probability of direct infection from a previous case
31	24	f.	Cooked cockles	8th Feb.	8 at least	Husband	
61	36	m.	Cooked mussels	1st March	4	Wife	Doctor says diagnosis quite clear. No specimen of blood taken
64	34	m.	Raw and cooked shellfish	19th March	15	2 sisters and children	
84	27	m.	Raw mussels	5th April	5	Companion	Worked at sewers up to 15th day before onset
91	27	m.	Cooked shellfish	5th April	Some days	?	
102	19	f.	Raw oysters	29th March	1 (?)	No others	Notified 28th April. History not taken until after that date

Case	Age	Sex	Variety—Raw or cooked	Date of Onset	Interval in days	Others partaking at the same time	Remarks
106	33	m.	Raw mussels	25th April	8 or 10	No others	A possibility of direct infection exists
109	26	f.	Raw mussels	24th April	25 or 27	Sister	
111	23	m.	Raw oysters	20th April	9	Others at dance who ate oysters complained of sore throat and sickness	
116	18	m.	Raw mussels	6th May	7	No others	
122	21	m.	Raw oysters	15th May	Shortest interval, 5 days but partook frequently	No others	
149	32	m.	Cooked cockles	14th June	14–21 days	No others	
150	25	m.	Raw mussels	20th June	20, date uncertain, frequently partakes	No others	
159	8	f.	Raw mussels	26th June	5	No others	
*176	11	f.	Raw mussels	24th July	10 to 14	Case 177 a friend not living in the same house	These patients went to the shop in company with each other. Attended same school
*177	11	f.	Raw mussels	16th July	About 6	No others except 176	Incomplete
200	22	m.	Winkles cooked	30th July	18	No others	12th August and 17th August. Serum test negative. Doctor still adheres. Case in next house onset 10th August
201	21	m.	Raw periwinkles	10th August	About 22	......	Serum test negative. Doctor adheres

Case	Age	Sex	Variety—Raw or cooked	Date of Onset	Interval in days	Others partaking at the same time	Remarks
203	17	f.	(?) Oysters	11th August	17–21, taking oysters daily	Stepmother	
215	21	m.	Raw and cooked mussels	28th August	5	Two companions	Serum test doubtful.
246	14	f.	Cooked shell-fish	22nd Sept.	7	All the family	
251	22	m.	Raw mussels	26th Sept.	14	Sister ate two	
*252	20	m.	Raw mussels	23rd Sept.	(?) Took twice weekly	Sister at another address had mussels from same shop and had diarrhœa on 9th Sept. but is now quite well	Died 3rd Oct.
*264	7	f.	Raw and cooked mussels	26th Sept.	(?) Took several times in week following 6th Sept.	Family	
*271	46	f.	Raw mussels	17th Sept. (?)	(?) Frequently partook	No others	A letter to be written cautioning vendor, 10th October, Dr. Niven
285	8	f.	Cooked shellfish	12th Oct.	5	Family	Serum test doubtful
290	23	f.	Cooked shellfish	6th Oct.	16	Husband and brother-in-law	
*295	22	f.	Raw mussels	12th Oct.	11 or 18 days, date uncertain	Others—(?) whom	
303	32	m.	Cooked shellfish	18th Oct.	4	F. S., tenant	Serum test negative 26th October, Doctor adheres. On 5th November also negative

* All these cases arose from source "A" (mussels from a dealer in Conway).

Case	Age	Sex	Variety—Raw or cooked	Date of Onset	Interval in days	Others partaking at the same time	Remarks
314	28	f.	Raw and cooked mussels	25th Oct.	20	No others	Died 2nd December. Serum test incomplete
315	15	m.	Raw shellfish	16th Oct.	?	Others (?)	
316	31	f.	Raw mussels	24th Oct.	4 shortest interval, partook often	Others (?)	
321	32	m.	Raw shellfish	29th Oct.	19	No others	Wife, onset October 19th, case 317
324	18	m.	Raw shellfish	24th Oct.	6 and 12 days interval	A friend	Serum test slow, incomplete
327	10	f.	Cooked mussels	25th Oct.	about 2	Other members of family	
330	32	m.	Raw mussels	31st Oct.	Said about 2 months ago on 10th Nov.	Others (?)	
335	32	m.	Boiled cockles	26th Oct.	?	Family took some	Died 19th Nov.
338	36	m.	Cooked mussels	17th Oct.	3 days the shortest interval, but partook previously	No others	
350	17	f.	Cooked mussels	15th Nov.	?	Sister	
354	23	m.	Raw mussels, oysters	25th Nov.	(?) Took shellfish frequently	Others (?)	
376	12	f.	Cooked mussels	12th Dec.	4 days	All the family had some	Serum test negative. Doctor adheres. Promised another blood specimen, but did not send it
377	19	m.	Raw and cooked mussels, oysters	10th Dec.	?	?	Infected at Aldershot
390	22	m.	Cooked mussels	20th Dec.	17 days	Father	

DUNCAN FORBES.

BACTERIOLOGICAL EXAMINATIONS.

The following is a tabulated statement of the result of the Bacteriological examination of specimens of blood taken from suspected cases of Enteric Fever :—

Number of Cases submitted to examination.	Collected by Medical Practitioners					Collected in Monsall Hospital								
				Duplicate and Control Specimens					Duplicate and Control Specimens		Cases from outside districts		Staff	
	Positive re-action	Negative adheres	Negative accepts	Positive	Negative	Positive re-action	Negative adheres	Negative accepts	Positive	Negative	Positive	Negative	Positive	Negative
765	289	33	272	5	62	37	0	14	16	24	6	6	1	0

It will be noted that in a certain number of the cases it is necessary to take further specimens, either on account of the want of definiteness in the re-action from the first specimen, or because the case presented features of Enteric Fever which made it desirable to have as much certainty as could be secured in regard to the nature of the illness.

These cases from outside the Hospital number 67 of which only five subsequently gave a positive re-action. The corresponding figures for Monsall do not, probably, have quite the same significance.

D. Forbes, M.D., &c.

MEASLES AND WHOOPING COUGH.

The following are the usual annual tables relating to measles and whooping cough. It will be remembered that the School Board has hitherto furnished to the Medical Officer of Health a daily list of all cases of measles and whooping cough coming to their knowledge. The homes of these cases are visited by the Sanitary Inspectors, who instruct the relatives in the precautions to be taken, and attend to any sanitary defects found. No schools or parts of schools were closed by the Sanitary Authority during 1902, although the infant departments of five schools were closed by the Board on account of measles, and one on account of whooping cough.

This is, I think, the proper course. Unless, as I believe to be best, the infant departments are to be closed when the proportion of scholars suffering from measles or whooping cough reaches 10 per cent., the next best thing is to close no schools at all.

The schools in which, during 1902, the cases of measles or whooping cough in the infant department at one time exceeded 10 per cent. of the average attendance, numbered 65, distributed as follows :—

NUMBER AND PERCENTAGE (10 AND OVER) OF SCHOLARS ABSENT FROM THE DEPARTMENTS OF SCHOOLS SUFFERING FROM MEASLES AND WHOOPING COUGH DURING 1902.

Date		District	School	Department	Average Attendance	Present Attendance	Measles	Whooping Cough	Percentage
March	5	Ancoats.........	Every Street (Board).....................	Infant	232	234	46	...	20
April	18	,, ...	St. Philip's (Church of England)......	,,	245	210	27	...	11
,,	23	,, ...	All Souls (Church of England).........	,,	138	125	16	...	12
December	15	Central.........	St. John's (Church of England)	,,	165	144	28	...	17
,,	17	,, ...	St. Matthew's (Board)	,,	119	76	26	...	22
March	4	St. George's...	Sharp Street (Board)......................	,,	90	80	12	...	13
October	29	,, ...	Albert Memorial (Church of England)	,,	254	240	37	...	15
November	29	,, ...	St. Edmund's (Roman Catholic)	,,	304	275	31	...	10
December	18	,, ...	Collyhurst Wesleyans	,,	116	89	20	...	17
February	4	Cheetham......	St. Luke's (Board).........................	,,	256	220	32	...	13
,,	6	,, ...	St. Catherine's (Church of England)..	,,	113	103	...	16	12
August	28	,, ...	St. Mark's (Church of England)	,,	111	95	16	...	14
July	7	Crumpsall......	Clarendon Road (Board)	,,	96	104	30	...	31
January	22	Moston	Moston Lane (Board)	,,	269	258	...	67	25
,,	22	Blackley	Blackley (Board)	,,	79	48	44	...	56
November	10	Moston	Moston Lane (Board)	,,	374	283	99	...	26
,,	25	,, ...	,, ,, ...	,,	363	264	151	...	42
February	5	,, ...	,, ,, ...	,,	268	250	...	73	27
January	22	Harpurhey ...	Burgess Street (Board)	,,	330	331	...	34	10
,,	29	,, ...	Christ Church (Church of England)...	,,	358	269	...	39	11
,,	18	,, ...	,, ,, ...	,,	358	296	...	39	11
February	5	,, ...	Burgess Street (Board)	,,	329	301	...	47	14
,,	25	,, ...	,, ,, ...	,,	325	301	...	58	17
November	21	,, ...	,, ,, ...	,,	345	291	58	...	16
December	10	,, ...	Christ Church (Church of England)...	,,	358	318	49	...	14
July	14	Moston	Dean Lane (Board)	,,	128	128	19	...	15
April	22	Newton.........	Ten Acres Lane (Board)	,,	111	108	15	...	14
,,	22	,, ...	St. Luke's (Church of England)	,,	200	185	29	...	15
May	15	,, ...	All Saints (Church of England)	,,	82	79	14	...	17
June	6	,, ...	Elm Street (Wesleyan)	,,	76	81	9	...	12
,,	11	,, ...	Grimshaw Lane (Board)	,,	101	102	18	...	18
,,	24	,, ...	St. John's (Church of England)	,,	133	99	44	...	33
,,	27	,, ...	Culcheth (British)	,,	122	97	26	...	21

NUMBER AND PERCENTAGE (10 AND OVER) SCHOLARS ABSENT, ETC.—*continued.*

Date		District	School	Department	Average Attendance	Present Attendance	Measles	Whooping Cough	Percentage
July	12	Newton	Culcheth (British)	Infant	125	75	50	...	40
November	21	,,	Holland Street (Board)	,,	113	97	33	...	29
January	24	Bradford	Memorial (Church of England)	,,	160	127	31	...	19
,,	25	,,	St. Bridget's (Roman Catholic)	,,	207	177	38	...	18
February	11	,,	,, ,,	,,	210	175	39	...	19
,,	11	,,	Queen Street (Board)	,,	267	222	76	...	28
,,	26	,,	St. Bridget's (Roman Catholic)	,,	207	175	39	...	19
November	25	,,	Queen Street	,,	251	250	...	29	12
January	24	Beswick	Christ Church (Church of England)	,,	339	286	59	...	17
February	6	,,	,, ,,	,,	339	253	105	...	31
September	3	,,	St. Mary's (Board)	,,	102	81	...	21	21
May	13	Clayton	Seymour Road (Board)	,,	160	208	44	...	27
June	6	,,	St. Cross (Church of England)	,,	120	70	24	...	20
September	17	Ardwick	Bank Meadow (Board)	,,	238	233	41	...	17
December	6	,,	St. Thomas' (Church of England)	,,	325	284	51	...	16
February	6	Openshaw	St. Clement's (Church of England)	,,	209	160	31	...	15
,,	18	,,	Lees Street (Board)	,,	119	97	59	...	49
,,	20	,,	St. Clement's (Church of England)	,,	209	100	75	...	36
March	6	,,	,, ,,	,,	200	138	69	...	39
,,	11	,,	Varna Street (Board)	,,	369	369	66	...	18
,,	22	,,	Ashton Old Road (Board)	,,	226	265	30	...	13
January	27	West Gorton	St. Frances (Roman Catholic)	,,	300	274	33	...	11
October	29	,,	St. Clement's (Church of England)	,,	182	176	21	...	12
February	20	Chorlton-upon-Medlock	St. Chrysostom's (Church of England)	,,	117	78	24	...	20
October	18	,, ,,	Holy Name (Roman Catholic)	,,	186	160	31	...	17
,,	31	,, ,,	,, ,,	,,	180	156	35	...	19
November	29	,, ,,	Eagle Street (Wesleyan)	,,	105	85	16	...	15
December	22	,, ,,	Webster Street (Board)	,,	350	297	68	...	19
August	29	Hulme	St. John the Baptist (Church of England)	,,	132	130	...	19	14
December	6	,,	St. Mary's (Church of England)	,,	180	150	20	...	11
,,	17	,,	,, ,,	,,	180	156	25	...	14
,,	22	,,	Vine Street (Board)	,,	207	175	...	26	13

From both measles and whooping cough in 1902 the death rate was under the average of the preceding 10 years, being highest in the case of measles in North Manchester, in the case of whooping cough in the Manchester township.

The districts in which measles exacted the highest death rate were Harpurhey, Newton Heath, Bradford, Beswick, Clayton, and Openshaw. The districts in which the death rates from whooping cough were highest were Harpurhey and Blackley, then Ancoats, St. George's, and Ardwick.

The number of Schools having over 10 per cent. of the average attendance affected at some period of the year, distributed in districts, was as follows :—

	MEASLES.	WHOOPING COUGH.
Ancoats	3	0
Central	2	0
St. George's	4	0
Cheetham	2	1
Crumpsall	1	0
Blackley	1	0
Harpurhey	2	5
Moston	3	2
Newton	9	0
Bradford...	5	1
Beswick	2	1
Clayton	2	0
Ardwick	2	0
Openshaw	6	0
Gorton	2	0
Chorlton-on-Medlock	5	0
Hulme	2	2

The following are the rates of mortality for 1902, compared with the mean of the previous five years :—

1902.—MEASLES MORTALITY.—RATE PER 1000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1897	1898	1899	1900	1901	Mean	1902
England and Wales	0·40	0·41	0·31	0·39	0·27	**0·36**	0·38
*76 Great Towns	0·55	0·56	0·46	0·43	0·43	**0·49**	0·49
London	0·43	0·69	0·47	0·42	0·43	**0·49**	0·51
City of Manchester...	1·17	0·50	1·28	0·47	0·53	**0·79**	0·44
Manchester Township ...	1·69	0·48	2·35	0·37	0·58	**1·09**	0·44
North Manchester	0·63	0·56	1·22	0·53	0·29	**0·67**	0·67
South Manchester	1·18	0·48	0·71	0·48	0·68	**0·71**	0·29
*103 Smaller Towns	0·43	0·41	0·28	0·51	0·25	**0·38**	0·37
Rural Districts	0·29	0·31	0·21	0·32	0·17	**0·26**	0·27

*The rates for 1901 and previous years are for the 33 Great Towns and 67 Smaller Towns.

The deaths from Measles in districts are as follows :—

1902—DEATHS AND DEATH-RATES FROM MEASLES IN THE VARIOUS DIVISIONS OF THE CITY.

Statistical Divisions	Estimated Population	Deaths	Death-rate
City of Manchester	**550,355**	**242**	**0·44**
I. Manchester Township ...	133,590	59	0·44
II. North Manchester.........	171,925	112	0·67
III. South Manchester.........	244,840	71	0·29
I. Ancoats	44,731	24	0·54
Central	29,280	15	0·51
St. George's	59,579	20	0·34
II. Cheetham	38,000	9	0·24
Crumpsall	8,955	1	0·11
Blackley........................	9,028	5	0·55
Harpurhey	16,831	15	0·89
Moston	13,165	4	0·30
Newton Heath	41,046	30	0·82
Bradford	24,046	18	0·75
Beswick	11,840	17	1·44
Clayton	9,014	13	1·44
III. Ardwick	42,039	12	0·29
Openshaw	27,627	20	0·72
Gorton (West)	29,889	4	0·13
Rusholme and Kirk.......	20,841	5	0·20
Chorlton-upon-Medlock..	57,685	13	0·23
Hulme	66,759	17	0·25

1902.—MEASLES.—DEATHS IN QUARTERS IN THE CITY AND IN GROUPS OF DISTRICTS.

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
City of Manchester	61	47	31	103
Manchester Township ...	13	12	8	26
North Manchester	29	26	18	39
South Manchester	19	9	5	38

WHOOPING COUGH.

The tables relating to this disease show the death-rate in Manchester for 1902 and for the preceding five years; in 1902 it exceeded the death-rate for England and Wales by 0·15 per 1,000 living.

The rates giving the Whooping Cough mortality for 1902 are as follows:—

1902.—WHOOPING COUGH MORTALITY.—RATE PER 1000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1897	1898	1899	1900	1901	Mean	1902
England and Wales	0·35	0·31	0·30	0·34	0·30	**0·32**	0·29
*76 Great Towns	0·41	0·42	0·38	0·45	0·36	**0·40**	0·37
London	0·41	0·48	0·38	0·43	0·35	**0·41**	0·40
City of Manchester...	0·56	0·31	0·42	0·68	0·41	**0·48**	0·44
Manchester Township ...	0·68	0·41	0·41	0·79	0·41	**0·54**	0·55
North Manchester	0·29	0·14	0·50	0·66	0·48	**0·41**	0·42
South Manchester.........	0·64	0·36	0·37	0·64	0·36	**0·47**	0·39
*103 Smaller Towns......	0·38	0·27	0·32	0·34	0·30	**0·32**	0·22
Rural Districts	0·31	0·25	0·25	0·27	0·25	**0·27**	0·22

* The rates for 1901 and previous years are for the 33 Great Towns and 67 Smaller Towns.

The following are the deaths in quarters, showing that the disease was most prevalent in the first half of the year:—

1902.—WHOOPING COUGH.—DEATHS IN QUARTERS IN THE CITY, AND IN GROUPS AND DISTRICTS.

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
City of Manchester	67	68	60	47
Manchester Township ...	27	31	14	1
North Manchester	31	13	13	14
South Manchester	9	24	33	32

The following table shows the districts most affected :—

1902.—DEATHS AND DEATH-RATES FROM WHOOPING COUGH IN THE VARIOUS DIVISIONS OF THE CITY.

Statistical Divisions	Estimated Population	Deaths	Death-rates
City of Manchester	**550,355**	**242**	**0·44**
I. Manchester Township	133,590	73	0·55
II. North Manchester	171,925	71	0·42
III. South Manchester	244,840	98	0·39
I. Ancoats	44,731	31	0·69
Central	29,280	8	0·27
St. George's	59,579	34	0·57
II. Cheetham	38,000	10	0·26
Crumpsall	8,955	1	0·11
Blackley	9,028	7	0·78
Harpurhey	16,831	14	0·83
Moston	13,165	6	0·45
Newton Heath	41,046	17	0·46
Bradford	24,046	10	0·41
Beswick	11,840	3	0·25
Clayton	9,014	3	0·33
III. Ardwick	42,039	25	0·59
Openshaw	27,627	12	0·43
Gorton (West)	29,889	7	0·23
Rusholme and Kirk.	20,841	4	0·16
Chorlton-upon-Medlock	57,685	14	0·24
Hulme	66,759	36	0·54

The following schools or portions of schools were closed during the year 1902 :—

Date	School	Department	Disease	By Whom Closed
Jan. 22nd	Blackley Board	Infant	Measles	The Board
Feb. 4th	Moston Lane Board	"	Wh. Cough	"
Feb. 11th	Queen Street Board	"	Measles	"
Feb. 18th	Lees Street Board	"	Measles	"
July 1st	St. Luke's Board	"	Measles	"
Nov. 24th	Moston Lane Board	"	Measles	"

SUMMER DIARRHŒA AND SIMPLE CHOLERA.

The following tables exhibit the facts in reference to this very fatal disease for a number of years. The mortality in 1902 is the lowest on record. It would be a matter for much congratulation if we could assume that this was due to improvements in administrative methods, but this is not possible. It is true that a strenuous effort has been kept up for a number of years to educate mothers in the feeding of their children. If we are to judge from the facts collected in reference to deaths from Diarrhœa, we should have to conclude that but little result has ensued. The long tube and bottle is in these cases the usual means of artificial feeding noted.

The mean temperature during the third quarter of 1902 was, it is true, higher than that of the third quarter of 1892, when a much higher mortality was recorded, but the mean temperature scarcely gives a fair picture of the conditions of temperature prevailing. In a season of prevailing low temperature there is a comparative scarcity of flies, and the third quarter of 1902 was such a season. It does not, on that account, follow that flies have to do with the fatality from Summer Diarrhœa, but it is conceivable that they may.

It is certain that Summer Diarrhœa does not stand in so close a relation to privy conveniences as Enteric Fever or Scarlet Fever do, and the explanation of this singular fact is not at once apparent. The most probable explanation is to be found in the assumptions that Summer Diarrhœa is due to the contamination of the food of infants, and that this contamination occurs in a large measure on the farms from which milk is supplied. This is the view held, apparently, by Professor Delépine.

Professor Delépine inclines, apparently, to the view that Summer Diarrhœa is caused chiefly by a bacillus of the Colon group, closely allied to the bacillus of Gaertner, and that the same bacillus is instrumental in causing meat and cheese outbreaks of Diarrhœa.

What is, however, very clear is that Summer Diarrhœa is the result of carelessness or errors in the feeding of young children, and that our energies must be directed towards counteracting, as far as practicable, these errors.

This subject has been dealt with under the section relating to our milk supplies.

The usual tables show that in 1902 the rate of mortality per 1,000 living was 0·54 as compared with 1·85 the mean for the previous five years, and that the rate of mortality for the third quarter was 0·88 as compared with 1·36 in 1888, the previous lowest figure. It will be seen also that what severity of incidence existed came late, the number of deaths in the fourth quarter of the year nearly equalling that in the third. The highest mortality occurred in West Gorton, the next highest in Beswick, the Central districts and Bradford suffering, in comparison with other districts, less than usual.

The following are the registered deaths from Diarrhœa and Simple Cholera in weeks during the third quarter of the year :—

July 5th	1
„ 12th	1
„ 19th	3
„ 26th	4
Aug. 2nd	3
„ 9th	3
„ 16th	2
„ 23rd	2
„ 30th	10
Sept. 6th	17
„ 13th	19
„ 20th	40
„ 27th	15
	120

The numbers of deaths in quarters are as follows :—

DIARRHŒA AND SIMPLE CHOLERA DEATHS IN QUARTERS 1892–1902.

	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	Mean for 10 years	1902
First Quarter......	32	48	47	51	37	49	55	46	41	45	**45**	33
Second Quarter..	36	131	55	59	78	50	49	53	66	32	**61**	33
Third Quarter.....	275	688	212	574	391	803	807	948	562	865	**613**	120
Fourth Quarter...	75	89	61	220	66	62	179	74	153	74	**105**	110
	418	956	375	904	572	964	1090	1121	822	1016	**824**	296

By means of the following table we are enabled to observe the comparative degree of severity with which different districts of the City have been visited. It should be compared with the corresponding tables in recent reports.

1902.—DEATHS AND DEATH-RATES FROM DIARRHŒA AND SIMPLE CHOLERA IN THE VARIOUS DIVISIONS OF THE CITY.

Statistical Divisions		Estimated Population	Deaths	Death-rates	Deaths under 1 year per 1000 Births
	City of Manchester	550,355	296	0·54	12·95
I.	Manchester Township	133,590	98	0·73	16·59
II.	Northern Districts	171,925	74	0·44	10·72
III.	Southern Districts	244,840	124	0·50	12·44
I.	Ancoats	44,731	36	0·80	17·06
	Central	29,280	18	0·61	15·01
	St. George's	59,579	44	0·74	16·87
II.	Cheetham	38,000	13	0·34	9·37
	Crumpsall	8,955	3	0·34	14·85
	Blackley	9,028	1	0·11	3·97
	Harpurhey	16,831	2	0·12	1·77
	Moston	13,165	6	0·45	11·74
	Newton Heath	41,046	19	0·52	12·30
	Bradford	24,046	14	0·58	13·18
	Beswick	11,840	14	1·18	20·64
	Clayton	9,014	2	0·22	6·19
III.	Ardwick	42,039	22	0·52	11·49
	Openshaw	27,627	17	0·62	14·18
	West Gorton	29,889	25	0·84	21·15
	Rusholme and Kirk	20,841	8	0·32	11·59
	Chorlton-upon-Medlock	57,685	15	0·26	7·13
	Hulme	66,759	37	0·55	12·03

By means of the following rates we are enabled to compare the fatality from Diarrhœa and Simple Cholera in Manchester with that prevailing in other parts of the country, and it will be seen that the death-rate in Manchester is not merely absolutely lower than usual, but is lowered relatively to other towns.

1902.—DIARRHŒA AND SIMPLE CHOLERA MORTALITY.—RATE PER 1,000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1897	1898	1899	1890	1901	Mean	1902
England and Wales	0·86	0·96	0·98	0·69	0·91	**0·88**	0·38
*76 Great Towns...............	1·24	1·22	1·21	0·94	1·23	**1·17**	0·54
London	0·92	0·97	0·93	0·78	0·87	**0·89**	0·54
City of Manchester	1·79	2·01	2·05	1·52	1·86	**1·85**	0·54
Manchester Township	2·35	2·66	2·60	2·12	2·72	**2·49**	0·73
North Manchester	1·50	1·66	2·00	1·10	1·61	**1·57**	0·44
South Manchester	1·65	1·85	1·78	1·45	1·56	**1·66**	0·50
*103 Smaller Towns	1·05	1·09	1·22	0·81	1·09	**1·05**	0·35
Rural Districts	0·56	0·75	0·76	0·48	0·65	**0·64**	0·22

* The rates for 1901 and previous years are for the 33 Great Towns and 67 Smaller Towns.

The following table supplies meteorological data for the third quarter of the year, the season in which the disease is most prevalent :—

Third Quarter of the years	Mean Temperature	Rainfall, Inches	Humidity, per cent.	Diarrhœa and Simple Cholera Mortality. Annual Rate per 1,000 living
1887	59°·0	7·7	73 %	3·38
1888	56°·5	11·2	77 %	1·36
1889	57°·7	10·5	73 %	2·61
1890	58°·8	8·1	74 %	2·28
1891	58°·2	12·8	79 %	1·57
1892	57°·0	12·5	78 %	2·07
1893	60°·4	10·7	74 %	4·95
1894	57°·8	9·0	78 %	1·55
1895	60°·4	11·2	77 %	4·17
1896	58°·5	9·7	76 %	2·93
1897	58°·9	9·7	73 %	6·01
1898	60°·1	6·1	74 %	6·00
1899	60°·8	7·7	75 %	6·96
1900	60°·3	9 6	78 °/o	4·14
1901	61°·9	6·5	74 %	6·33
Mean	**59°·1**	**9·5**	**74 %**	**3·75**
1902	57°·6	5·9	78 %	0·88

NOTIFICATION OF PHTHISIS.

1.—General.

During the year 1902 there were notified to the Public Health Office 1,275 cases of Phthisis, as compared with 1,339 in 1901, and 1,573 cases in 1900, although 1,449 cases were visited and registered during the year. Altogether, 4,552 cases have been notified since September 1st, 1899, of whom 652, or 15 per cent, have died.

The number of cases existing in the City has been taken at three times the number of deaths. If all the deaths occurring amongst notified cases could be assumed to be ascertained, the above figures would seem to indicate that the total number of cases is considerably greater.

The cases may be classified into those notified from the workhouses, or by Poor-Law District Medical Officers, from other Institutions including the Consumption Hospital, and by private practitioners, as follows :—

	Poor Law Cases.	Institutions.	Private Practitioners.	Total.
1900	587	446	540	1573
1901	625	373	341	1339
1902	667	305	303	1275

PARTICULARS OF CASES NOTIFIED FROM INSTITUTIONS.

Institutions.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Total.
Manchester Union Workhouse	126	145	92	72	435
Chorlton Union Workhouse	39	39	48	40	166
Prestwich Union Workhouse	5	1	...	5	11
Poor-Law Union Cases	18	17	11	9	55
Consumption Hospital	40	49	51	61	201
Ancoats Hospital	8	...	5	11	24
Chorlton-upon-Medlock Dispensary	6	3	2	5	16
Hulme Dispensary	5	6	2	2	15
Gartside Street Dispensary	14	3	...	3	20
Royal Infirmary	8	...	1	...	9
Medical Mission, Red Bank	3	4	5	6	18
Clinical Hospital	...	...	1	1	2
St. Mary's Hospital	...	...	...	...	...
Southern Hospital	...	...	...	...	...
Children's Hospital, Pendlebury	...	...	...	...	...
Total	272	267	218	215	972
Private Practitioners	75	75	73	80	303

It will be seen that the number of total cases notified during the last two years has been smaller than in the year 1900, and that the proportion of cases notified by Poor-Law Medical Officers has increased The conclusion to be presumably drawn is that the administration carried out somewhat discourages medical practitioners from notifying cases of Phthisis.

It is necessary, therefore, to consider what is the administrative action pursued. When a case of Phthisis is notified to the Medical Officer of Health, it is entered in two registers, one according to name, and the other according to address. Particulars are then recorded on an enquiry form filled in by the Assistant Medical Officer who visits the case.

These particulars, while arranged so as to give a large amount of information as regards modes of infection, are intended primarily for purposes of administration. They are concerned with the duration of the illness, the houses which have been recently occupied by the Consumptive person, and which were occupied by him at the time at which he became infected, the condition of these houses so far as can be readily ascertained, especially of the house now occupied, the history of illness in the family, the exposure to infection from relatives, workmates, companions, from infected houses, &c.; particulars of occupation and personal habits (so far as these may be supposed to have a bearing on the question), the precautions which are being taken by the Consumptive to prevent infection, the instructions given by the Medical Officer at his visit, and, finally, the methods and amount of cleansing and disinfection required.

If disinfection is to be performed by the Sanitary Authority a Sanitary Inspector in some cases visits and fills in a form stating what rooms and articles are to be disinfected. This form is transmitted to the disinfecting station.

A request is addressed to the owner of the premises requesting his permission to carry out the measures of disinfection considered requisite, which is almost invariably complied with.

Disinfection of walls is effected mainly in two ways, either by brushing the walls over with a solution of chlorinated lime, guaranteed by analysis to contain at first 2½ oz. to the gallon, or by cleaning them down with dough. At the same time the floors and articles of furniture are cleansed with a solution of chlorinated lime or simply by brushing with soap and water.

Disinfection is also carried out in houses or rooms after a death from Phthisis, or when they have been vacated by a Phthisical person.

Two investigations have been made into the effects of these procedures, one by Dr. Coates, which was entirely experimental, and showed that the methods of disinfection followed were adequate to remove all traces of living tubercle bacilli; and another by Dr. Beatty, who inquired into the history of infection in houses previously occupied by a Consumptive individual, distinguishing those which had been disinfected and those which had not been disinfected. So far as a conclusion could be drawn from the few histories obtainable, it did appear that the methods of disinfection followed sufficed to prevent the houses from originating the disease.

During 1902, 962 houses were cleansed by the Corporation, 2 with milk of lime, 601 with solution of chlorinated lime, and 359 with dough. The number of cleansings carried out by the people themselves was 1,937.

The immense importance of maintaining cleanliness in houses has been demonstrated by the investigations of Dr. Cornet and by the subsequent work done by Dr. Coates.

Working on the results obtained by Dr. Cornet, the scheme placed before the Sanitary Committee made provision not merely for primary enquiry by the Medical Staff, but also for subsequent systematic visits by the Visitors of the Ladies' Public Health Society and by the Sanitary Inspectors—by the former in the central parts of the City, and by the latter on the outskirts. These visits were at first paid fortnightly, but the period has since been extended in many instances to a month.

The object of the visit is to see that the measures of precaution in which the Consumptive person had received instruction from the Assistant Medical Officer are being properly carried out, and to ascertain when Consumptive persons have changed their place of abode, so that the necessary measures of cleansing may be adopted. The value of the visit depends on the extent of the knowledge which the Visitor possesses of the subject and on his or her capacity for dealing with persons whose relatives are affected with Consumption. Undoubtedly this is the point at which difficulty is liable to arise, and these visits have to be paid with great circumspection. But it does not appear to me that we can dispense with these repeated visits, and of late they do not appear to have given rise to any friction.

Every three months the rooms occupied by a Consumptive person must be cleansed, the walls being cleaned down with dough, when it is ascertained that the patient has avoided spitting on the floors. If it should appear that proper precautions were not being taken the houses would be again disinfected with solution of chlorinated lime.

During the year 318 cases were added to the Sanitary Inspectors' visiting lists, and 263 to the Health Visitors'. There were on the Inspectors' lists at the end of the year 969 cases, and on the Health Visitors' 1,189.

From time to time cases are reported as to which a doubt may reasonably be felt whether they are really tubercular in their nature. In these cases samples of sputum are collected in sterilised tins provided by Professor Delépine, and are forwarded to the College for examination. In this way considerable assistance is obtained in arriving at a conclusion as to their nature, though it is not possible to base a conclusion as to the presence of Phthisis on one examination only, unless tubercle bacilli are present.

The number of such specimens sent in 1902 was 585, of which 248 contained tubercle bacilli—that is to say, came from Consumptive patients.

When it appears that a patient will use, keep, and properly cleanse a spit bottle he is provided with one at the expense of the Corporation. Two hundred and forty-seven spit bottles were sent to patients during the year, and 343 were reported as being in use.

In connection with the work already mentioned, 957 special cases (as deaths, removals, dirty houses) were entered in the Business Book as dealt with, which term includes letters to owners, tenants, health visitors, &c., the making out of forms 1, 2, and 3, receiving reports, giving instructions, checking cost, endorsing forms.

A card index has been formed containing now about 9,000 cards, with from 1 to 4 entries on each.

HISTORY OF INFECTION.

In tracing the source of the disease to other Consumptive persons several points have to be kept in mind. It is very difficult for any person to avoid inhaling a certain number of tubercle bacilli in one or other place of resort or conveyance, and an amount of infection which will light up the disease in a constitution weakened by want, alcoholism, or other cause, or which is naturally feeble, would be quite unequal to do any harm to persons of more robust constitution. It is, however, probably always possible to infect the strongest person, provided a sufficient amount of infection is present.

Further, the time elapsing between the implanting of the disease and the appearance of symptoms of Phthisis is very variable. Probably one year is the most common period. It is, besides, not always possible to be sure when the disease did actually show itself, though the onset is taken to be marked by loss of strength, wasting, sleeplessness, cough, pains in the chest, &c.

One must, therefore, adopt some rules in judging of the most probable source of infection.

The first is, that healthy people do not contract Phthisis except on prolonged exposure to infection, or, in exceptional cases, after very intense exposure.

Second, the exposure must usually have occurred within two years of the commencement of symptoms.

Hence, if relatives or persons living in the same house, or intimate friends, have had Consumption at a period compatible with the production of infection, these are taken as the probable source of the disease. Where several equally likely sources are present both are recorded.

When the probable sources of infection are analysed from this point of view the sources of infection are divided into those which are likely, less likely, on account of the intervals which have elapsed, and possible.

The cases, as we have seen, notified by practitioners and from institutions other than the workhouse, numbered 663, and the source of infection was traced in these as follows :—

Source of Infection	Likely	Less Likely	Possible
Previous case, same House	166	48	9
Companion	26	6	2
Neighbour	12	11	5
Others	3	1	...
Workmates	45	30	4
Houses (including public houses)	26	17	5
	278	103	25

The details of the cases traced to persons in the same house or to relatives are as follows :—

	Likely Source	Less Likely	Possible
Mother	23	12	2
Daughter	6	...	1
Father	29	8	2
Brother	32	11	1
Wife	8	4	...
Son	5	...	...
Sister	16	1	...
Husband	13	3	1
Aunt	8	1	...
Cousin	2	...	1
Step-sister	1	...	...
Brother-in-law	1	...	...
Son of Landlady	1	...	...
Daughter of Landlady	1	...	...
Parents	1	...	...
Brother's Wife	1	...	...
Uncle	4	...	1
Father's Mother	1	...	...
Wife's Sister	1	...	...
Mother's Sister-in-law	1	...	...
Brother-in-law	1	...	...
Grandfather	1	...	...
Niece's Husband	1	...	...
Lodgers	8	2	...
Wife recovered	...	1	...
Sister recovered	...	1	...
Nurse	...	1	...
Step-mother	...	2	...
Wife's Aunt	...	1	...
Total	166	48	9

In 64 instances infection might have occurred from more than one source, as follows :—

Aunt or Sister.
Father? Companion?
Husband? Brother-in-Law?
Father or Mother.
Father or Companion
Aunt or Father.
Father or Brother-in-Law.
Father or Uncle.

Public Houses or Sister.
Public Houses or Food.
Uncle? Father?
First Husband or Brother.
Neighbour—Workmate.
Workmate—Army.
Father or Half Sister.
Father or Brother.

Mother or Brother.
Brother or Neighbour.
Sister or Beerhouse.
Father or Neighbour.
Neighbour or Companion.
Workfellow--Mother.
Brother—Companion.
Workmates—Husband.
Mother—Brother.
Father or Mother.
Sister? or Brother.
Father? or Mother.
Lodger or House.
Husband or Neighbour.
Mother and Brother.
Brother? or Neighbour.
Sister and Work.
Mother or Sister.
Brother-in-Law? or Niece.
Wife or Workfellows.
Mother or Common Lodging House.
Employer, Public House?
Brother? Workshop?
Workmate? Mother?
Father and Sister?
Workmate? Public House?
Public House? Workfellows.
Brother or Cousin.
Wife? Companion?
Workmate? Brother?
Public House? Workfellow?
First Wife or Sister.
Bank? Friend?
Brothers or Sister.
Brother or Sister.
Aunt (or Workfellow.)
Neighbour? Mother-in-Law.
Father or other relatives?
Milk or Workfellow.
Son or Nephew.
Father, Brother, or other relatives.
Brother or Companions.
Neighbour or Public House
Shop? or Tenant?
Workmate? or Mother's Step-Sister
Brother or Sisters.
Sister or Father.

In six instances milk is mentioned as a possible source of infection, and in two out of the six as the likely source. This is but a very small number out of the total, but the difficulties of tracing Phthisis to milk are exceedingly great. The Phthisis can only be secondary to a previous abdominal infection, the beginning of which must be very rarely ascertainable.

The facts in one case are worthy of special notice, and have been recorded by Dr. Cowie in these terms:—

> "In the course of my investigation of cases of Consumption in connection with the voluntary notification of Phthisis in Manchester, the following history has been recorded which strongly points to infection by means of tuberculous milk.
>
> "The patient, E. S., male, aged 17, was visited on November 1st, 1902. The illness commenced in December, 1901, with loss of appetite, especially in the morning. He had no cough then, but began to lose flesh very slightly. This continued up to the third week in May, 1902, when an ischiorectal abscess developed which was opened. After this

the patient began to lose flesh rapidly and has continued to do so up to the present. The abscess discharged for about three months and left a fistula which was operated on about seven weeks before the date of my visit. One week after the operation, as the patient was drinking a large quantity of liquids, diabetes was suspected, the urine was examined and found to be loaded with sugar. He had been drinking a large amount of water at his work for some weeks previously, but this had not been observed at home, so that the diabetes had certainly not been present for more than three months. There was no cough before the operation on the fistula—the patient and his mother were both certain on this point. After the operation, cough developed rapidly, and the sputum now contains tubercle bacilli. There is no family history of Consumption with the exception that the patient's sister, aged five years, died of tuberculosis on July 2nd, 1901. This child was removed from home to another address on April 18th, 1901, where she remained until her decease and where E. S. also stayed for about two months at the same time. For some weeks before her removal the girl had suffered from loss of appetite and some vague symptoms of discomfort in the abdomen, but she had no cough then; in fact, she never developed a cough. On May 26th she complained of epigastric pain and vomited. The abdomen was hard and tender, the tongue furred, and the pulse small and quick. Appendicitis was diagnosed, and an abscess ultimately formed which began to discharge through the umbilicus. On June 26th, 1901, an operation was performed and an abscess evacuated. After the operation, from the condition then found, the conclusion was come to that the disease was tuberculous, and the mother was informed of this fact at the time.

"Neither of these two patients drank much milk, probably not more than 3-ozs. each daily; but the milk supplied to this family has been almost continuously tuberculous for over two years, and at one period especially (March, 1901) was very markedly so. Specimens of the milk which the family was using were taken on September 5th, 1900, and found by Professor Delépine to cause tuberculosis in the guinea-pig: from a fresh milk supply on March 4th, 1901 (two cows with tuberculous udders found by Mr. Lloyd, Veterinary Surgeon to the Manchester Corporation), and again from the first milk supply on January 18th, 1902 (one cow with tuberculous udder found by Mr. Brittlebank, M.R.C.V.S., Veterinary Surgeon to the Manchester Corporation). When the address of the two patients was changed in the end of April, 1901, the milk supply was again tuberculous, for on July 11th, 1901, the farm from which the milk was obtained was visited by Mr. Brittlebank, and a well-marked case of tuberculosis of the udder found. The milk from this cow was also found by Professor Delépine to cause tuberculosis in the guinea-pig. The cow in question was slaughtered, and the udder submitted to examination by Professor Delépine who reported the lesions in the udder to be most extensive, the mucous membrane of the acini being very markedly tuberculous. In the opinion of Mr. Brittlebank the udder must have been affected with tuberculosis for at least three or four months.

"The disease in both these cases began in the abdomen, and in the case of the girl never reached the lungs, while in the case of the boy the lungs were only affected secondarily. No source of infection apart from milk could be ascertained in either case."

The cases reported from the Workhouses are much more difficult to get any history from. They have often led very wandering lives, and can give but a poor account of their previous history.

Classified in the same manner they give the following figures :—

Source of Infection, a Relative	Likely	Less Likely	Possible	Two Possible Sources
Brother	11	5	11	2 Parents—Brother
Husband	12	1	1	1 {Father—Workfellow Brother or Workfellow
Daughter	4	2	1	1 Father and Companion
Father	7	3	...	Sister or Niece
Lodger	2	1	...	Brother ? Public House
Sister	7	7	...	
Parents	2	...	...	
Son............................	4	...	...	
Father-in-Law	1	...	...	
Wife	5	3	...	2
Uncle.........................	1	...	...	
Nephew	1	1	...	
Brother-in-Law	2	1	...	
Sister-in-Law	...	1	...	
Aunt's second Husband..	1	...	...	
Stepson	1	...	...	
Mother	4	2	...	1
Tenant of House	...	1	...	
Daughter of Landlady ...	1	...	...	
Son of Landlady	1	...	...	
Stepsister	1	...	...	
Mistress	1	...	...	
Stepmother's Mother ...	1	...	...	
Stepbrother	1	...	...	
Total	71	28	13	

Other Sources of Infection	Likely	Less Likely	Possible	Total
Companions	16	3	...	19
Neighbour	4	5	1	10
Workmate	25	12	2	39
Houses including Common Lodging Houses and Public Houses	19	12	1	32
Total ...	64	32	4	100

Thus out of a total of 612 cases notified from Workhouses, a probable source of infection was ascertained in 135 instances.

ON THE INFLUENCE OF OCCUPATION ON THE PRODUCTION OF PHTHISIS.

This is a question of great complexity.

We know from the statistics which have been prepared by the Superintendent of Statistics in the Registrar-General's Office that Phthisis falls much more heavily on certain classes of work than on others.

In some of these there are special factors at work, such as the production of an excessive amount of dust or some influence specially enfeebling the system, as with workers in lead. In the case of publicans and their servants, intemperance plays a prominent part in predisposing the system to attack.

In many of the rougher classes of work there is uncertainty of work with its frequent attendant intemperance. Here there is exposure to infection in the public-house, or in a certain proportion of cases in the common lodging-houses, in which a terrible mortality is exacted by this disease.

Hence in determining the influence of occupation on the production of Phthisis, it is necessary to ascertain not only the statistical facts and the circumstances of employment co-related to them, but the social circumstances and habits of the operatives, and the part which these play in the production of the Phthisis death-rate.

It is also evident that the care or absence of care shown by the operatives in different employments as regards spitting in the workshops, and especially in the closets attached to them, will have an important influence, since a certain number of the workpeople, especially in the more unfavourable classes of work, will have Phthisis, and the mischief resulting will depend largely on how they manage their expectorations.

The questions involved are of the utmost moment.

Are the causes of our heavy industrial mortality removable? Do they explain the not infrequent obscure occurrences of Phthisis in quarters in which it was not to be expected, and in which no trace of its origin can be ascertained?

In tracing the causes of Phthisis in our large centres of industry, certain broad facts were first ascertained from the figures relating to occupations furnished by the Superintendent of Statistics in the Registrar-General's Office. It was found that in 19 out of 44 counties the female death-rate from Phthisis exceeded the male, and that these were either agricultural or coal mining counties. Further, it appeared that, while at early ages, both in town and country, the female Phthisis death-rate exceeds the male, and at advanced ages the male Phthisis death-rate exceeds the female, at intermediate ages, in nearly all large towns, the male death-rate begins to exceed the female at a much earlier age than in the country. There are thus factors at work in the towns, bearing heavily on males by comparison, which do not exist in the country.

From the same statistical work it was possible to get an exhaustive view of the comparative mortality in different employments pursued by males between the ages of 25 and 65.

These could be classified into three main groups. First, one containing a large number of certain labourers, etc., publicans and their servants, etc., known to suffer specially from intemperance; second, a purely industrial group; third, a mixed group, comprising various classes of workpeople.

It was very manifest from this classification that, apart altogether from specific injury inflicted by particular occupations, a special tendency to Phthisis was manifest amongst the intemperate classes.

A special study of figures relating to alcoholism obtained from the same work appeared to show that workers in our large industrial centres suffer more from intemperance than workpeople living in the country.

Then, again, Phthisis is much more prevalent in Central than in South Manchester, and more prevalent in South Manchester than in North Manchester, which may be regarded as pre-eminently industrial. Nor can these differences be explained by the relative extent of the common lodging-house element in each.

There is another set of conditions which affects the result, which may be classified as social, though its elements are difficult to determine. They comprise, however, insanitary houses, overcrowding, smaller wages, more precarious work, and so on.

We thus arrive at the classification of the factors operating to produce the high Phthisis death-rate amongst males in our large centres, as—

Social,
Alcoholism,
Effects of the occupation, direct and indirect.

Now Phthisis is an infectious disease, lasting usually some years, during which a very large amount of matter is expectorated, which contains frequently great numbers of tubercle bacilli. These bacilli possess great persistence of vitality except in presence of direct sunlight, but do not readily produce the disease when inhaled, except in persons with weak lungs or having constitutions in some way enfeebled. Nevertheless, the presence of the infective matter is a central fact without which Phthisis would not be communicated.

Now, where does spitting go on to the greatest extent? It is easy to ascertain that this is most abundantly practised in common lodging-houses, in many public-houses, in railway carriages, and in the homes of careless consumptives.

In the case of workshops, a most complete examination was made, for a number of works, including two rubber factories, a cotton mill, a blacking manufactory, two large ironworks, a rag-sorting establishment, a large tailoring establishment, a chemical works, a smallware establishment, a gasworks, a glass manufactory, a machinist's, and a cotton spinning mill, in every detail which could be supposed to affect the health of the operatives.

As regards expectoration, the marks of sputum on the floor were, almost exclusively, found in the male departments only. Hence males are much more exposed to infection than females in the workshops, on account of the deposit on the floor of a much larger amount of infection in proportion to the persons affected.

That this is an important element in the propagation of Phthisis is proved by these considerations. Dust taken from various portions of living rooms in which consumptives have expectorated on the floor is, in a high proportion of instances, capable of producing the disease.

The mortality from Phthisis in common lodging-houses, where persons are often crowded together in living rooms not well lighted, and in which cases of Phthisis are often present, is very excessive. Publicans and their servants undergo a very high mortality from Phthisis, and it is certain that infective matter plays an even more important part than alcoholism in producing Phthisis.

It may therefore be assumed that in those works in which spitting is practised by the males, the disease is certain to be propagated by tuberculous expectoration. Amongst the parts of workshops requiring attention especially are the attached closets, since expectoration was observed in these, even when it was not present in the workshop, and the disease is here especially liable to be conveyed, the space being small, confined, and often dark.

Thus males are exposed to two specially disastrous influences, which affect females to a much smaller extent, viz., infection in the public-house and infection in the workroom and attached closets.

It is worth while enquiring whether the fountain of Phthisis which is present in common lodging-houses and similar places cannot flow over into other classes of society.

In enquiring into the mortality from Phthisis in one particular occupation, in which there did not seem much risk of infection through the employment, I found that some of the infected persons lived in Angel Meadow, and went to public-houses frequented by persons living in common lodging-houses.

Phthisis is also comparatively prevalent amongst persons working at the Corporation gasworks and amongst the market porters, not a few of these also living in the common lodging-houses, while others use the same public-houses as persons living in common lodging-houses.

No doubt these public-houses are a source of infection to many workmen not living in common lodging-houses, and who frequent also other public-houses. In this way the disease spreads outward from this intensely infected quarter, and probably passes from public-house to public-house.

When we come to enquire into the influence of common lodging-houses exerted indirectly through infection of articles passing through the hands of consumptive persons living in them we are not able to ascertain that this is very great. Thus, from the return prepared by the Chief Constable in 1898 showing the occupations of the inhabitants of these houses, we find that, out of a total of 5,831, only 117 were tailors, and it is not possible positively to say of any other occupation yielding a considerable number of persons living in common lodging-houses that the articles produced in it would carry the disease. Out of these 117 tailors, perhaps 2·3 persons would die per annum from Phthisis, an insignificant contribution to the occupational infection. Yet it can hardly be doubted that Phthisis occurring in persons engaged in tailoring, or the manufacture of wholesale clothing, or in upholstering, or in house decorating or painting, is liable to bring a sufficient amount of infective matter into the house to light up the disease in susceptible persons.

At the same time, these influences must be small compared with the direct effect of contact with infective dust in the workshop and in the public-house.

How complicated is the relation of Phthisis to occupation is seen from the fact that, when we investigate the incidence of notified cases of Phthisis on different works of the same kind, some works stand out conspicuous in respect of the number of cases occurring in them and reported to us, and, on investigating the individual cases, we find that there is not infrequently reason for connecting the occurrence of these cases with the social circumstances and habits of the workman.

If, then, the social circumstances and habits of the workman affect the Phthisis mortality in the calling which he pursues, does not the calling in return affect the social circumstances and habits of the workman? Undoubtedly such is the case.

Occupations such as those of market porters, messengers, and labourers, require that the persons pursuing them should live near the centre of the town, and that they should not pay very highly for their house room. They are thus often under conditions of overcrowding, and exposed to infection.

Persons exposed to very high temperatures—strikers and moulders, cotton spinners, glass blowers, people in underground bakehouses, etc., have, by virtue of the high temperature at which they work, a special tendency to consume large quantities of beer, and so to be injured in their constitutions as well as to be exposed specially to infection, and in this way the conditions of employment act indirectly on the health of the operatives.

When, therefore, we come to consider the high mortality from Phthisis which afflicts those pursuing special callings in which the statistics afford no proof of special addiction to alcohol, such as lead workers, file cutters, metal workers generally, porters, tailors, etc., we must first make a considerable allowance for social conditions and habits while recognising that these occupations present special injurious conditions which have to be dealt with. Some light is thrown upon the causes leading to a high occupational mortality by a study of the ages on which Phthisis falls most heavily.

If the chief incidence is on ages 25–45, probably there is intemperance or some specially injurious factor in the occupation. If the incidence is high on an earlier age, the cause of the high mortality is, doubtless, occupational. If the chief incidence is on a later age, the cause is progressive, and may be the continued effects of the occupation or continued exposure to a high degree of infection.

The mortality from Phthisis at different age groups has been calculated for a number of occupations pursued in Manchester for the three years 1899, 1900, and 1901.

Applying the above considerations, law clerks, coachmen, grooms (not domestic), and cabmen, persons employed in storage and porterage, messengers, porters, watchmen (not railway or Government), boot, shoes, slipper, patten, clog makers, inn, hotel keepers, publicans, etc., either suffer specially from intemperance and consequent special exposure to infection, or the occupation is specially injurious.

There can be no doubt that the former is here the prevailing influence.

In the case of women, Phthisis is most severe at ages 15 to 25 amongst laundrywomen, and also amongst costermongers, hawkers, and street sellers. Probably in the first occupation this must be taken to mean special exposure to infection, coupled with the effects of a severe occupation; amongst the latter it is probable that intemperance and hardship are conjoined.

Charwomen also suffer heavily at early ages. They are exposed specially to infection, and probably suffer also from intemperance and domestic hardship.

Charwomen, tailoresses, shirt makers, and seamstresses suffer most heavily at ages 25–45. It is probable that this is due in the first class partly to infection, partly to habits, and that in the last two occupations the stress of occupation tells heavily.

In other occupations the stress falls on more advanced ages:—

Commercial or business clerks.
Ironworkers.
Painters, decorators, glaziers.
Plumbers.
Glass manufacturers.
Cotton operatives (males).
Tailors.
Costermongers, hawkers, street sellers.
General labourers.
Cotton operatives (females).

In the case of ironworkers, there is no doubt the fact that they do not readily succumb to infection. With regard to the next two classes, their occupation exposes them much to house infection, and the effect increases with each year in which the calling is pursued.

As regards glass manufacturers, the adverse influences are complex. These workers begin to suffer at an early age, and are known to be intemperate; but the work is throughout severe.

In the case of cotton operatives, the system gradually gives way under the stress and strain of the work. It is the same with female cotton operatives: the atmosphere is unfavourable to health generally.

The effect of occupation tells on tailors at a later age than on tailoresses. This is due, no doubt, to the persistence of infection in the male workrooms.

As regards the next two classes, the progressive mortality is due no doubt to the persistent presence of infection in the houses in which they live, which overrides the other influences.

There can be little doubt that ironworkers, cotton operatives in Manchester, hawkers, and general labourers are, as classes, more intemperate than the average worker, but the other formidable influences at work keep piling up the death-rate.

Thus a cumulative death-rate, though it shows other powerful factors besides alcoholism to be at work, does not disprove the effects of intemperance, but merely obscures them.

A notable feature in the Manchester table of occupational mortalities is the much higher mortality prevailing amongst men than amongst women following the same occupations at corresponding ages. This is, in all probability, due to the two factors on which stress has been already put, namely, spitting in the workrooms and closets used by the men, and intemperance amongst the males, in what relative proportions it is impossible to say.

The conclusions at which we arrive as the result of the analysis of our tables may be stated as follows:—

The occupational mortality from Phthisis is due in different occupations to very different groups of causes. There are, however, two outstanding factors which cause men to have much higher death-rates than women, viz., spitting in the workroom and drinking in public-houses. These enter into different occupations in very different degrees, and vary considerably even in the same occupations. They do, however, produce an effect on all, and their aggregate effect is much greater than that of particular occupational causes. Hence our first effort must be to diminish their general influence. For this reason, notices with regard to spitting have been posted conspicuously in the various rooms of common lodging-houses. Another set of notices have been sent to public-houses, with a request that the keepers will post them in the bar rooms.

When the medical report on a notified case of Phthisis is brought in, Mr. Lock looks up the workplace which has been exposed to infection and writes to the owner, requesting that the notices prepared for workshops may be posted, and asking how many will be required. These notices are now very extensively posted throughout the City.

Notices with regard to spitting are also exhibited in waiting rooms at railway stations and in the City tramcars.

Another lesson which is practically enforced in the common lodging-houses is the need for frequent and systematic cleansing. This is, however, quite as necessary in public-houses and in workshops. With regard to the former the difficulties are not very great, but in many workshops they are almost insuperable, as for example in printing establishments, in which the dust accumulates round blocks and under presses, etc.; in rag shops, in iron foundries, and indeed in many classes of work; yet it is a most urgent requirement in all classes of work that strict cleanliness should be observed. Wherever it is at all possible, moreover, the floors should be wet swept, so as not to stir the infective dust which has accumulated.

Considering the immense importance of these precautions in protecting the health of the operatives, it is somewhat astonishing that the question has not yet been taken up by the various trade unions. The supreme importance of cleanliness in workshops, also, one would have expected the Friendly Societies to have urged on workmen insuring with them as a matter of pecuniary benefit to themselves.

Of still greater benefit would be an enactment prohibiting expectoration on the floors and walls of places of public resort, of public-houses, of workshops and factories, and of all public vehicles.

Nothing, however, will enable us to dispense with individual instruction and pressure, and one of the great advantages of a compulsory notification of Phthisis would be that it would enable us to ensure proper personal precautions in workshops and factories.

I do not propose here to consider the means necessary to remove the dusts and effluvia which in different occupations act upon the lungs injuriously and so lay them open to invasion by the tubercle bacillus. It brings us to the very complex question of special ventilating appliances for the different dangers to which the operatives are exposed. The use of local fans, by which the dusts produced by the operative are immediately removed, has been recently greatly extended under the auspices of the Home Office, and much good work is being done in this direction.

What, it seems to me, we must endeavour to attain is that every consumptive workman takes such precautions at work that he does not expose his fellows to infection. It must never be forgotten that, owing to the much deeper inhalations practised during work, the danger is far greater during the hours of work than at any other period. In order to give some idea of the enormous amount of infective matter which careless workpeople may discharge at their various occupations, I have had excerpted by Mr. Lock the total periods lived by different workpeople at their various occupations from the commencement of their illness down to the date of their notification in 1902. I have estimated that only about one-third of all cases are notified, and if we take the working day at 8 hours, the figures give a fair representation of the amount of infection being deposited in various places on the supposition that no personal precautions are taken during work. The representation of different classes of work is, however, very partial. As regards infection to other workpeople, special attention may be called to clerks (who are infectious for an average period of two years), dyers, persons in chemical works, French polishers, glass workers, ironworkers, labourers, printers (who are on an average infectious for 2 1-6th years), railway employés, shoe and slipper makers, stoneworkers, and woodworkers. But, in addition to those employments, there are many others in which infection not only passes to other workpeople in the same establishments, but affects the public generally, and in which, therefore, the discharge of tuberculous sputum over long periods of time must cause a great amount of infection. Thus bar tenders and public-house musicians, also beerhouse keepers, will infect the customers. Charwomen will infect the houses and offices which they clean, and so infect the clerks, while the consumptive clerks will in their turn infect the charwomen. Clay tobacco-pipe makers suffering from Phthisis will be liable to cause tuberculous ulceration of the mouth, furriers will infect the skins, and furniture brokers and upholsterers will infect articles of furniture; fustian workers, mill hands, mantle makers, milliners, machinists, tailors, workers in velvets, and warehouse employees will infect the articles of clothing amongst which they work. Painters and decorators and plumbers will spit in and infect the houses in which they work. Rag sorters will infect the various articles in the making of which rags are used. The same is true of waste works. Cab-drivers often sit in their cabs in cold and wet weather.

PHTHISIS—1902.

Periods of Illness While Still at Work.

	No. of Persons.	Aggregate Period of Illness at Work. Years.	Totals. Years.	Average Years.
Brass Works	5	$2\frac{2}{12}$	...	$\frac{7}{12}$
Bookbinders, Rulers, Folders, etc.	3	$1\frac{8}{12}$	...	$\frac{7}{12}$
Butchers	3	$3\frac{9}{12}$	...	$1\frac{3}{12}$
Bar-tenders and Public-house Musicians (3)	17	$25\frac{5}{12}$	...	$1\frac{6}{12}$
Blacking Works	3	7	...	$2\frac{4}{12}$
Building Trade—				
Plasterers	1	5	23 Persons	$1\frac{3}{12}$
Bricklayers	8	$8\frac{7}{12}$		
Labourers	10	$8\frac{5}{12}$		
Slaters, etc.	4	6		
Beerhouse Keepers	3	$4\frac{10}{12}$	...	$1\frac{7}{12}$
Bakers and Confectioners	7	$11\frac{3}{4}$	...	$1\frac{7}{12}$
Brushmakers	2	$1\frac{1}{2}$	...	$\frac{6}{12}$
Boxmakers (Cardboard)	4	$9\frac{10}{12}$	...	$2\frac{5}{12}$
Cab Drivers	6	$17\frac{5}{12}$	...	3
Stablemen	5	$5\frac{9}{12}$	...	$1\frac{6}{12}$
Calenderers	3	$3\frac{4}{12}$	...	$1\frac{1}{12}$
Charwomen	27	$33\frac{4}{12}$	...	$1\frac{3}{12}$
do. at Public Houses	4	$3\frac{3}{12}$	...	$\frac{10}{12}$
Clerks	16	$32\frac{6}{12}$	...	2
Clay (Tobacco) Pipe Makers	3	$4\frac{9}{12}$	...	$1\frac{7}{12}$
Carters	10	$15\frac{7}{12}$	...	$1\frac{7}{12}$
Coal Heavers	6	$8\frac{6}{12}$	...	$1\frac{5}{12}$
Colliers (underground)	3	$2\frac{7}{12}$	...	$\frac{10}{12}$
Cap Makers	4	$1\frac{9}{12}$	...	$\frac{5}{12}$
Chemical Works	4	12	...	3
Calico Printers	2	$1\frac{2}{12}$	...	$\frac{7}{12}$
Corset Makers	2	$2\frac{7}{12}$	...	$1\frac{4}{12}$
Dock Labourers	9	$13\frac{7}{12}$	...	$1\frac{6}{12}$
Dyers	3	$1\frac{10}{12}$	6 Persons	$1\frac{4}{12}$
do. Labourers	3	6		
Enginemen (Crane, &c.)	4	5	...	$1\frac{3}{12}$
Furriers	2	$8\frac{9}{12}$	...	$4\frac{5}{12}$
Furniture Brokers	3	$13\frac{6}{12}$	...	$4\frac{6}{12}$
French Polishers	4	$6\frac{2}{12}$	...	$1\frac{7}{12}$
Fustian Workers	4	$4\frac{6}{12}$	...	$1\frac{2}{12}$
Gas Works	6	$6\frac{6}{12}$	...	$1\frac{1}{12}$
Glass Workers	5	$14\frac{1}{12}$	...	$2\frac{10}{12}$
Hawkers	31	$58\frac{8}{12}$	...	$1\frac{11}{12}$

PERIODS OF ILLNESS WHILE STILL AT WORK—*Continued.*

	No. of Persons.	Aggregate Period of Illness at Work. Years.	Totals. Years.	Average Years.
Iron Workers—				
Blacksmiths	4	$9\frac{3}{12}$	62 Persons $107\frac{4}{12}$	$1\frac{8}{12}$
Fitters	8	$15\frac{9}{12}$		
Moulders	10	$12\frac{8}{12}$		
Planers	3	7		
Drillers	2	18		
Grinders	2	$4\frac{3}{12}$		
Turners	5	$7\frac{4}{12}$		
Dressers	2	$1\frac{2}{12}$		
Boiler Makers	1	1		
Labourers	17	$22\frac{2}{12}$		
Various	8	$8\frac{9}{12}$		
Laundresses	9	$15\frac{6}{12}$	...	$1\frac{9}{12}$
Labourers (General)	30	$48\frac{8}{12}$	...	$1\frac{8}{12}$
Millhands (Cotton)—				
Weavers	5	$6\frac{10}{12}$	29 Persons	$1\frac{2}{12}$
Spinners	5	$7\frac{3}{12}$		
Winders	11	10		
Various (Piecers, &c.)	8	9		
Mantle Makers	4	$4\frac{9}{12}$	...	$1\frac{3}{12}$
Printers (unspecified)	3	$3\frac{8}{12}$	12 Persons	$2\frac{2}{12}$
do. Compositor	1	$\frac{9}{12}$		
do. Feeders	3	$4\frac{10}{12}$		
do. Labourer	1	$4\frac{6}{12}$		
do. Bronzer	1	7		
Printers (Relief Stamper)	1	$\frac{8}{12}$	3 Persons	$1\frac{10}{12}$
do. (Lithographic)	2	5		
Painters and Decorators	7	$8\frac{1}{12}$	...	$1\frac{2}{12}$
Plumbers	4	$4\frac{7}{12}$	...	$1\frac{2}{12}$
Porters (General)	2	$1\frac{7}{12}$	...	$\frac{10}{12}$
do. (Market)	16	$27\frac{6}{12}$	...	$1\frac{9}{12}$
Railway Employés—				
Porters	1	3	18 Persons $18\frac{8}{12}$	1
Labourers	6	$5\frac{3}{12}$		
Carriage Works	7	$6\frac{1}{12}$		
Various	4	$4\frac{4}{12}$		
Rag Sorters	5	$7\frac{3}{12}$	...	$1\frac{6}{12}$
Rubber Works—				
Garment Makers	5	$3\frac{9}{12}$	13 Persons $10\frac{6}{12}$	$\frac{10}{12}$
Waterproofers	4	$3\frac{10}{12}$		
Labourers	3	$2\frac{10}{12}$		
Rubber Ball Makers	1	$\frac{1}{12}$		

PERIODS OF ILLNESS WHILE STILL AT WORK—*Continued.*

	No. of Persons.	Aggregate Period of Illness at Work. Years.	Totals. Years.	Average Years.
Shoe and Slipper Makers	12	$32\frac{10}{12}$	...	$2\frac{9}{12}$
Shopmen	5	$6\frac{6}{12}$	...	$1\frac{4}{12}$
Stone Workers	7	$10\frac{6}{12}$	...	$1\frac{6}{12}$
Sewing Machinists	16	12	...	$\frac{9}{12}$
Soldiers	5	4	...	$\frac{10}{12}$
Servants (Domestic)	12	$21\frac{7}{12}$	...	$1\frac{10}{12}$
Tinplate Workers	5	2	...	$\frac{5}{12}$
Tobacco Workers (1 Seller)	4	$3\frac{4}{12}$	...	$\frac{10}{12}$
Tailors	23	38	...	$1\frac{9}{12}$
Tram Service	2	3	...	$1\frac{6}{12}$
Travellers (Commercial)	9	18	...	2
Upholsterer	1	$\frac{4}{12}$	...	$\frac{4}{12}$
Umbrella Works	5	$9\frac{4}{12}$	...	$1\frac{11}{12}$
Velvet Works	3	$6\frac{1}{2}$	...	2
Waste Works	2	$\frac{11}{12}$	...	$\frac{6}{12}$
Wood Workers—				
Joiners	11	$16\frac{6}{12}$	37 Persons $44\frac{10}{12}$	$1\frac{3}{12}$
Pattern Makers	2	3		
Cabinet Makers	10	$12\frac{5}{12}$		
Sawyers	6	$6\frac{5}{12}$		
Packing Case Makers	2	$1\frac{5}{12}$		
Coopers	3	$2\frac{5}{12}$		
Wooden Skewer Makers	3	$2\frac{8}{12}$		
Warehouse Employés—				
Warehousemen	13	$32\frac{6}{12}$	45 Persons 75	$1\frac{8}{12}$
Makers-up	8	$6\frac{5}{12}$		
Packers	9	$16\frac{5}{12}$		
Hookers and Stitchers	6	6		
Porters	9	$13\frac{8}{12}$		
School	27	33	...	$1\frac{3}{12}$
Milliners	2	$5\frac{5}{12}$	...	$2\frac{8}{12}$
Unclassified	37	$72\frac{5}{12}$	...	$1\frac{11}{12}$
	709	$1082\frac{7}{12}$	Average of Total	1·54
	5	...	...	...
Total	704	...	Nearly	$1\frac{7}{12}$ Yrs.

Such a table as this enables us to realise the immense importance of stopping the discharge of expectoration in workshops, if possible, and it has therefore been given in extenso.

Mr. Lock has also prepared another table, showing for general cases, other than those reported from Crumpsall and Withington, the occupations in which the various patients were engaged at the time when they were presumably infected, and a similar table for cases notified from Crumpsall and Withington. These would, however, be too long to reproduce, and I have, therefore, excerpted the more important groups. On looking at the totals it will be seen, as might be expected, that Phthisis in the male has a much greater effect in producing pauperism than Phthisis in the female.

In certain male occupations the workers are from one or another cause very near the pauper line. Amongst these are hawkers, warehouse porters, wood-workers, dyers, market porters, rubber workers, shoemakers, and persons engaged in the building trades. Nor are cotton workers or ironworkers very much better. In no class of female workers, however, does the same result ensue when they are attacked by Phthisis, though a considerable portion still find their way to the workhouse.

TABLE SHOWING THE TOTAL NUMBER OF CASES INVESTIGATED DURING 1902 OTHER THAN THOSE REPORTED FROM THE UNION HOSPITALS, FROM CRUMPSALL, AND FROM WITHINGTON RESPECTIVELY, WITH THE OCCUPATIONS IN WHICH THEY WERE ENGAGED AT THE PERIOD WHEN THEY WERE PRESUMABLY INFECTED, FOR SELECTED OCCUPATIONS.

MALES.				FEMALES.			
	General	Crump-sall	Withing-ton		General	Crump-sall	Withing-ton
Barmen	4	0	1	Cotton Manufacture	25	3	0
Commercial Travellers	5	1	0	Charwomen	23	8	10
Building Trade	7	11	0	Do. in Public Houses	4	2	2
Cotton Manufacture	3	4	0	Domestic Servants	7	3	3
Clerks	18	0	0	Housework	97	25	14
Gasworks Employes	4	4	0	Laundresses	6	2	3
Glassworks	4	1	0	Machinists	16	3	3
Hawkers	3	6	3	Waitresses at Public Houses	8	0	0
Ironworkers	35	24	16				
Printers	5	1	1				
Railway Employes	9	0	3				
Soldiers	5	3	2				
Tailors	12	5	1				
Warehousemen (not including Porters)	29	10	6				
Warehouse Porters	3	9	6				
Wood-workers	14	16	3				
Dock Labourers	3	6	2				
Dyeing	4	7	1				
Market Porters	1	15	2				
Rubber Workers	3	1	5				
Shoemakers	3	4	3				
TOTAL	174	128	55	TOTAL	186	46	35

As has already been mentioned, persons affected with Phthisis have been found to have been in contact with Phthisical fellow-workmen in a considerable number of instances at a period such that they might have contracted the disease from them. These may be classified as follows to the number of 96:—

1. Those engaged in the production of articles which might carry infection, or in occupations specially dangerous to the public, as follows:

   House painter 1, at one dyeworks 3, cotton winders 4, carder 1, piecer 1, spinner 1, corn miller 1, tanner 1, fustian cutters 3, shoemaker 1, warehouseman 1, warehouse makers-up 3, in cap warehouse 1, silk hatter 1, umbrella makers 2, rag sorters 2, waterproofer 1, upholsterer 1, cap makers 2, baker 1, yarn sorter 1, tobacco pipe maker 1, laundresses 2, packer in blacking works 1, costume presser 1, shoemaker 1, plumber 1; total, 40.

2. Metal workers:

   Fitters 3, turners 2, ironmoulder 1, brassworker 1, foundry labourer 1, machine sawyer 1, spindle grinder 1, tin case maker 1, engineer's labourer 1, ironworker 1, wire galvaniser 1, milling machinist 1; total, 15.

3. Printing establishments:

   Paper ruler 1, printer's bronzer 1, printer's labourer 1, printer 1; total, 4.

4. Clerks: 5.

5. Labourers:

   Bricklayer 1, coalheaver 1, indiarubber works 2, porters 2, labourer 1, carter 1, blacking labourer 1, stokers 2, engineer's labourer 1, labourer (sawmill) 1, canal boat labourer 1; total, 14.

6. Miscellaneous:

   Joiner 1, stonemason 1, machinist 1, barman 1, athletic outfitter 1, joiner's machinist 1, collier 1, attendant at asylum 1, stableman 1, furnace and engineman 1, domestic servant 1, plasterer and puller-down 1, aniline works 1, repairer of carriages (L. & Y. Railway) 1, sawyer 1, pork butcher 1, hawker 1, mason 1; total, 18.

This list again illustrates the danger attaching to the presence of Consumptives amongst workpeople, unless adequate precautions are taken to avoid the distribution of infection, both to other workmen and to the purchasers of goods made in workshops containing Consumptives, and emphasises the need for increased pressure to secure this end by every available means. One such means appears to be provided by the Factory and Workshop Act, 1901, Section 2.

Effect of Personal Habits on the production of Phthisis.

The effect of bad personal habits, with special reference to intemperance, is not easy to determine. An effort has been made, however, in every case to determine the personal habits of the consumptive, and the results are exhibited in the following table, the sign + standing for good personal habits, and the sign — for bad. The great preponderance of intemperance in males, and the increasing proportion of intemperates with advancing years, are noteworthy features, but are subject to the deductions that there will be a greater reluctance to ascribe intemperance to women and to younger men.

PERSONAL HABITS.—MALES.

0–14		15–24		25–44		45–64		65 and upwards.	
+	—	+	—	+	—	+	—	+	—
16	1	73	17	138	189	58	171	4	19

PERSONAL HABITS.—FEMALES.

0–14		15–24		25–44		45–64		65 and upwards.	
+	—	+	—	+	—	+	—	+	—
18	0	97	1	157	59	43	27	5	1

3.—RECOMMENDATIONS.

A large amount of useful work has already been done in connection with the direct prevention of Phthisis, but it is necessary to advance further.

1. More popular instruction is still required, and it is generally recognised that much may be effected by the insurance societies, especially by those dealing with small sums. Mr. Hoffman is of opinion that these societies will do much good by circulating plain useful advice amongst persons insured. In this I concur.

2. The notification of Phthisis should be made compulsory. Sheffield has this year obtained powers for the compulsory notification of Phthisis.

3. An even more urgent requirement is the provision of adequate hospital accommodation for Consumptives from crowded households. In the scheme placed before the City Council, and accepted, it was stated that 100 beds would be sufficient for this purpose.

   The time has now arrived when such provision is required for the maintenance of the usefulness of notification, whether voluntary or compulsory.

   An experiment carried on here at the Smallpox Hospital, in Clayton Vale, in 1901, and a more recent experiment carried on by Dr. Newsholme, at the Brighton Sanatorium, on somewhat different lines, have quite shown the feasibility of treating Consumptives within the city if necessary.

   If a portion of these cases in an earlier stage of the disease could be treated in Mr. Crossley's new sanatorium at Delamere, provision might be made for the remainder by the Corporation.

   I am of opinion that Mr. Crossley should be asked to allocate a certain number of beds to the Corporation on terms to be arranged.

4. Powers should be obtained to prohibit spitting on the floors or walls of public rooms, workshops, public conveyances, public conveniences, and public houses.

On the Precautions taken, and on the Measures needed, to Protect the Milk Supply.

More than three-fourths of the fresh milk used in Manchester is imported, but in addition there is a large and probably an increasing consumption of condensed milk.

Attention has been drawn in previous reports to the unfavourable conditions under which a large proportion of the milk consumed in the City is produced. The cowsheds are dirty, as are also the flanks and udders of the cows. The milkers do their work with unwashed hands. Insufficient care is taken in cleansing the milk cans and churns. Where the milk is cooled after milking it is often allowed to become and remain warm during transit. As a result it arrives in the City too often in a condition to produce disease, as Professor Delépine's bacteriological examinations have shown. Much depends on the time consumed in transit and on the temperature of the air.

In many instances the churns in which the milk is sent into the City are of defective construction, are imperfectly fastened, and admit of the entrance of dirt.

The milk delivered at the railway stations may be taken to the depots of the middlemen, and there mixed, but in many instances it is delivered unmixed at the retail shops.

There is in Manchester good reason for delivering the milks unmixed.

It has been for many years the practice of the Sanitary Department, when a sample of milk taken in transit to a retail dealer has been found adulterated, to take a control sample at the railway station, and so to determine, as far as possible, whether the adulteration has been practised at the farm or subsequent to delivery.

It has thus been to the interest of milk dealers to retain a knowledge of the source of the supply to the retailer.

Should it become necessary to ascertain the source of impurities in the milk, this power of determining the sources of the retail supplies would be of much assistance. But there is no doubt that in the course of the retailing of milk, it is frequently exposed to a considerable degree of contamination.

At many of the shops it is sold from open basins and is exposed to the dust of the shops, as well as to that shaken from the clothes of the shop-people and customers.

As ordinarily sold in the streets from milk carts, milk is also exposed to contamination from street dust and from the clothes of the milkman.

Now the growth of various forms of bacteria in the milk, even when the weather is not very warm, is strikingly rapid, and in warm weather a few drops of milk taken under unfavourable conditions may contain over a million bacteria at the end of 24 hours.

Moreover, as Professor Delépine has shown in his paper "On the examination of cows milk, &c.," these bacteria have some of them marked disease-producing capacity. This power to produce disease is usually absent in milk recently drawn from the cow, even when there is inflammation of the udder. Direct observation has shown that milk drawn from the udder under proper precautions is commonly free from bacteria. The capacity to produce disease is, therefore, due to germs subsequently introduced, which have multiplied in the milk. There is every reason to believe that amongst these germs subsequently introduced are those which cause fatal summer diarrhœa, and that, in many instances, the milk is already in a very dangerous condition when it reaches the City Railway Station.

The terrible fatality from summer diarrhœa in infants which is undoubtedly due to the swallowing of impure materials and largely to the consumption of milk from unsuitable sources, does not by any means exhaust the ill effects of an unsuitable milk supply, but it will serve as a text on which to base a few remarks on sanitary administration in connection with milk.

Having regard to what we know of the modes in which milk becomes capable of producing disease, what we should be inclined to aim at is to procure a supply of clean milk of good quality from cows guaranteed free from tuberculosis by the tuberculin test, kept cool by means of ice from the time it leaves the cow to the time it reaches the consumer, and not exposed to infection or contamination in any way from the water supply, the cans in which it is conveyed, or the persons who handle it.

That is what the Moelke Forsyning Company at Copenhagen, so ably managed by Mr. Busck, have for a number of years succeeded in doing, and what the Manchester Pure Milk Supply Company would have done had they received adequate support from the public.

It is most unfortunate that this effort to raise the level of our milk supply should have failed from want of public support.

I am informed that there was great difficulty in inducing the farmers to accept the application of the ice with which they were supplied by the Company to keep the milk cool, the most essential part of the procedure.

Should any further effort be made in this direction, it should be at the public expense, every detail of management, both of farms and dairy, being under the control of the Sanitary Committee, and the initial loss being reckoned as an expenditure for the prevention of disease.

What has the Sanitary Authority of Manchester meantime been doing?

To begin with, they have supplied their fever hospital with pure milk guaranteed to contain 3·25 per cent. of fat, and 8·5 per cent. of solids not fat, to be derived from cows free from tuberculosis as determined by the application of the tuberculin test, by their own Veterinary Surgeon, and to come from cowsheds in a condition satisfactory to the Medical Officer of Health.

At the present time, these conditions are rigorously fulfilled, the herd having recently been tested by the Veterinary Surgeon under the Sanitary Committee. The cowsheds from which the milk supply for the hospitals is obtained were altered some years ago to my satisfaction, and the water supply was inspected by me and ascertained to be perfectly pure.

Frequent determinations of the percentage of fat in this milk supply are made at the office by the Gerber test.

The milk is always kept cool and fresh. The cows and premises are examined at intervals not exceeding three months, and the tuberculin test is applied at intervals not exceeding six months. All necessary conditions, then, are fulfilled so far as the Corporation Hospitals are concerned, a matter affecting some 400 persons in a condition peculiarly liable to food infection, and comparable therefore with a considerable sterilisation installation.

Frequent visits are paid by your Veterinary Surgeon to the City cowsheds, and he reports that the cows are now kept groomed and free from dirt on the udder. As regards the hands of the milkers, he reports that he has found them clean on nearly every occasion when he has examined them.

Great pains are expended by the farmers on the cleansing of the City cowsheds, which are being gradually altered in accordance with plans and specifications prepared by Mr. Brittlebank with the assistance of Mr. Hudson.

Over outside farms we have no control under the Dairies, Cowsheds, and Milkshops Orders. But in respect of farms outside the City we do what we can in the way of instruction. To every farmer known to us to supply Manchester with milk is sent the following memorandum :—

Public Health Office,
Town Hall, Manchester,
October 24th, 1898.

Dear Sir,—I am instructed by a resolution of the Sanitary Committee, passed at a meeting held on August 31st of this year, to send to all farmers supplying milk for consumption in the City of Manchester the accompanying memorandum on certain points to which they desire more particularly to draw the attention of farmers. Any matter of difficulty which may be experienced in regard to the memorandum, if referred to the Medical Officer of Health, will receive careful attention. It will be understood that the memorandum is intended not by way of compulsion but for purposes of guidance.

Medical Officer of Health.

Suggestions addressed to Farmers supplying Milk for consumption in the City of Manchester.

The Committee appointed by the Corporation of Manchester to consider questions relating to the milk supply of the citizens, having had under their consideration the milk which is sent into the City from outside districts, have been led, by the investigations which have been made for them, to the conclusion that the milk supply leaves much to be desired, both as regards cleanliness and as regards the transmission of disease. They are advised that where milk is not kept clean it is one of the chief agents in producing fatal diarrhœa amongst children. They are also advised that consumption of the bowels in children and consumption of the brain are largely produced by the use of tuberculous milk, and they are in possession of proof that such milk is being largely imported into the City from surrounding districts. They feel obliged, therefore, to call on all farmers and cowkeepers supplying milk to the inhabitants of their district to take such precautions as will ensure a supply of clean, pure, and wholesome milk to the City.

With this object in view, they would point out that no milk should be sent into the City during the warm season of the year which has been kept at the farmhouse for more than a few hours, either separately or mixed with other milk, and that previous to despatch such milk should be kept cool. It is indeed much to be desired that milk should be kept cool on its way to the consumer in the City, but individuals could scarcely be expected to incur the expense of this proceeding.

Special precautions should be taken in respect of the following particulars :—

1. Cleanliness of the cows. The flanks and udders of the cows should at all times be kept in a state of strict cleanliness. There is good reason for believing that the absence of care in this matter not only leads to great fatality among children, but is one of the chief reasons why tuberculosis spreads amongst the stock.

2. No milker should be allowed to milk cows unless the hands have been thoroughly cleaned immediately before milking, and conveniences for cleaning the hands with soap and water should be supplied to the milkers.

3. The cowshed should, at all times, be kept rigorously clean. It should be cleaned out by sweeping twice a day, at such periods that no dust will be floating in the atmosphere of the cowshed during the period of milking.

4. The dairy should be kept in a state of strict cleanliness, and all utensils used for receiving, storing, or conveying milk should be washed with scalding water before each time of using.

5. The manure from the cowshed, so soon as it is removed from the cowshed, should be taken to the midden-stead, which must not be in the immediate vicinity of the cowshed. The object aimed at will, however, be partly attained by the erection at some distance from the cowshed of a midden-stead provided with an impermeable floor and sides, and either

covered over or drained into an impermeable cesspool, at a distance of at least 20 yards from the cowshed. If the farm is supplied with water from a well, the well should be at least 100 feet from any collection of manure or midden.

6. The cowshed should be thoroughly washed out from time to time in the warm season, when it can rapidly get dry, so as to remove all traces of tuberculous matter and other impurities.

Strict cleanliness of the animals and of the cowshed, sufficient to remove infectious dry material and to prevent its accumulation, is the most essential thing, both in preventing milk from causing diarrhœa and in the struggle with tuberculosis.

STRUCTURAL CONDITIONS.

Certain structural conditions are requisite in order that the milk may be clean and free from disease :—

A. The floor of each cowshed must be even, and should be composed of concrete slightly ribbed in that portion of the stall where the cows stand. Behind the cows should be a cement concrete channel leading to a trapped drain outside the cowshed. Between the channel and the wall, if any, behind should interpose a sufficient space so that the cow's dung does not splash upon the wall. Many floors are at present so uneven and otherwise imperfect that it is extremely difficult, and may be impossible, to cleanse them.

B. The cowshed should be well lighted throughout, otherwise cleanliness is not to be looked for. There is no reason why every cowshed, fit for the purpose, should not have abundant light, so that every part of it should be visible during ordinary daylight.

C. Every cowshed should be sufficiently and properly ventilated. That is to say, there should be introduced into it a sufficient supply of fresh air in such a manner as not to cause draughts, and provision should be made for extracting the fresh air supplied after it has become contaminated in the cowshed. The supply of fresh air should be spread out as much as possible, so as not to cause draughts, and extraction should be conducted on the same principle. Thus, air may be admitted under the eaves by spaces which should, however, be accessible for cleaning, and extracted continuously by the ridge of the roof. Or, if a hayloft is over the cowshed, a double set of openings should be made in the walls for the admission and extraction of air, the latter being near the ceiling level. In the latter case, also, the ceiling of the cowshed should be rendered impermeable to dust.

D. A cowshed should not have less than 50 superficial feet per cow, nor be less than 12 feet high. If the cowshed is large, the height should be correspondingly increased, but the floor space should not be diminished.

The Committee are aware that many existing cowsheds do not conform to these suggestions, but they consider it desirable to place milk producers in possession of their views on the subject.

Miscellaneous.

Farmers are also advised that—

1. Their stock should be guaranteed free from tuberculosis. In order to get rid of the disease it will be necessary to have their existing stock tested and tuberculous cows removed from the cowshed, and fresh cows purchased under a guarantee of freedom from tuberculosis. This will, at first, entail a loss, but the ultimate gain will more than compensate for the initial loss. In order to mitigate the initial loss, they may isolate the cows found to be tuberculous and fatten them for slaughter. This will require, however, some provision for isolation. On the other hand, from the public health point of view, it would be better to slaughter the affected animals at once and to replace them by fresh cows, where this could be done. It is largely a matter of expense. This operation will evidently be most easily conducted while the cows are outside in summer, but, with sufficient arrangements for isolation, may be effected at any season.

2. No milk should be sent into the City from a cow affected with knots, indurations, or other diseased conditions of the udder.

3. The water consumed by the cows should be pure and wholesome. Where this is supplied by ponds, each pond should be fenced round so as to prevent excreta being washed into it, and means should be devised to prevent the cows from fouling the water in the act of drinking.

4. The water supply of the homestead should be free from contamination, for the sake of the household. It will be sufficient as regards utensils if all water used in washing these is scalding hot, providing that the utensils are thoroughly cleaned.

5. A supply of clean wholesome water should be carried into the cowshed, and stored in a clean covered cistern, both in order to supply drinking water to the cows and with a view to cleansing the cowshed. Where, however, wholesome water is supplied under pressure, it will suffice to have a tap in the cowshed, though it is desirable also to fix a tap to each trough connected with a common pipe running along the back of the troughs.

6. To prevent the propagation of tuberculosis, each cow should have a separate stall and a separate earthenware feeding trough, bedded in cement in such a manner as to leave no corners at the head of the stall in which infectious matter may lodge.

A feeding rack should also be provided.

The Committee are desirous of impressing, both on cow-keepers and on dairymen, the urgency, and, so far as their own jurisdiction extends, the necessity of strict cleanliness in respect of the cows, milkers, cowsheds, dairy, and milk utensils.

When a sample of milk taken at a railway station is found to contain tubercle bacilli, and Mr. Brittlebank pays his visit to ascertain the existence of any cow on the farm apparently suffering from tuberculosis of the udder, he makes a record of the condition of the cowsheds and cows in respect of cleanliness, and the suitability of the cowsheds in respect of structure, and urges on the farmer the need of cleanliness, giving him at the same time a copy of the memorandum.

In the few instances in which the structural conditions have been quite incompatible with cleanliness, tubercle bacilli having been found in the milk, the farmer has been summoned under the Manchester Act of 1899, to show cause why he should not be prohibited from sending milk to Manchester.

I am of opinion that this application of the Act might with advantage be made more frequent, a specification of the structural alterations advised being supplied.

The Liverpool Corporation have also taken action in this direction, and no doubt good has been effected from our joint efforts.

I have not been able to see why the requirements in respect to cubic space applied to rural cowsheds under the Dairies, Cowsheds, and Milkshops Order should be less stringent than those having reference to town cowsheds.

If one considers that the danger attaching to the consumption of milk in summer increases with every hour after it leaves the cow, it will be seen that the sanitary condition of the rural cowshed ought to be far ahead of that of the town cowshed. This becomes increasingly apparent when we consider the greater stringency of inspection applied to town cowsheds.

Further, when we consider the danger arising to children from tuberculosis of the udder, it is clear that this must be greater from rural cowsheds than from town cowsheds, the average age of cows in the former being much higher than in the latter, and the extension of disease being *pro tanto* greater. For the same reason the liability of the cows to other forms of disease is greater.

Indeed, it would be a most beneficial thing for most towns, having regard to the apathy shown in rural districts regarding matters necessary for the protection of milk supplies, if the milk supply could be produced within the town itself.

When we come to consider the conditions under which milk is distributed after it reaches the town, our record is not so good. It is now quite five years since attention was prominently drawn to the dirty state of much of the milk sold in the City. This state of things has to a large extent passed away. It is not now possible to state that an abundant black sediment can be found in numerous samples of milk. Trouble is taken to strain off the grosser filth. But in the small shops the milk is still freely exposed to dust.

As regards the quality of the Manchester milk supply, so far as adulteration or abstraction of cream are concerned, the Sale of Foods and Drugs Acts have been energetically administered and there seems to be no doubt that the general quality of the milk from this point of view, is good, even in the poorest districts. It might be well if more attention were directed to the use of preservatives. The use of any preservative in milk must be regarded as dangerous.

At this point it may be well to consider how the condition of milk as regards the presence of bacterial impurities is concerned can be dealt with.

It is certain that the use of some waters at farms is excessively dangerous, especially if water is added to the milk.

If milk is unstrained, and gross filth is present, and if this can be proved, such milk might be seized and destroyed as unfit for human consumption under the Public Health Act, 1875.

It would be necessary to carefully decant the milk in order to ascertain the presence of gross impurities, and no provision is made under the Public Health Act for an examination of this nature.

Presumably, however, such examination could be insisted upon. Strictly speaking, the unfitness of such milk for human consumption would depend on the length of time it had been kept.

Apart from these difficulties, supposing that there were no opposition to the examination of milk exposed for sale, gross impurities would certainly disappear, and it would be necessary to fall back on bacteriological examination.

What form of bacteriological examination or result should we look to, and under what Acts should we proceed? It appears to me that in this matter we are entirely in the hands of the bacteriologist. If he can assure us that a given milk contains an excessive quantity of germs, and that it is capable on inoculation of rapidly killing experimental animals, the milk supply requires investigation and condemnation. If, further, the milk yields improper reactions, and gives an excessive sediment, or otherwise shows signs of an unsuitable origin, this might be taken into account in settling the penalty.

But it does not seem possible to regard such a condition of the milk as an adulteration, or as an offence coming under the Sale of Food and Drugs Acts.

It would usually be quite impossible to seize the milk under the Public Health Acts, since the conditions require investigation, which would take time.

It is, thus, clear that entirely fresh legislation is needed to enable us to protect our children from lethal milk supplies, due to contamination and unsuitable storage.

Such fresh legislation is, however, urgently required. If a bacteriological standard is applied, farmers will see their way to keep their milk cool during transit, and Railway Companys will be induced to supply proper means of storing and conveying milk, refrigerating vans being brought into use when necessary. There will be no undue delay in the transmission of milk, and no mixing of old with fresh milk.

In all our specifications for alterations to cowsheds we require a wash-basin and clean towels to be supplied in the cowsheds.

If a bacteriological standard is applied, means will be found to clean the cowsheds at suitable times, to cleanse the flanks and udders of the cows, and to see that the milkers keep their hands perfectly clean, as well as to make such structural alterations as are necessary to ensure a decent measure of cleanliness.

In working out a practical scheme by which a control may be applied to the conditions at present existing in the collection, storage, conveyance, and sale of milk; the first step would be to determine under what conditions as regards the number and kind of bacteria present, the results of experimental inoculations, and as regards other factors, such as reactions, &c., a milk must be regarded as dangerous.

This would have to be determined by Professor Delépine.

Upon his statement that a particular milk is dangerous, a visit should be paid by the Veterinary Surgeon to the farm from which the milk has come in the case of a station sample. In the case of a dangerous milk sold in a retail shop it would be necessary to ascertain the conditions existing at the shop, the length of time elapsing between milking and the period at which the sample had been taken, and the conditions existing at the farm.

The conditions noted and where necessary, tested would be the cleanliness of vessels, of cows, cowsheds, milkers, water supply, means of cooling, precautions adopted en route, state of the churns, precautions taken on delivery, &c.

The time has surely arrived when these conditions so plainly concerned with the production of disease should be brought under control. But all details should first be worked out before taking any administrative action.

There appears at the present time to be a tendency to believe that all our difficulties will be solved by the establishment of municipal depots for the distribution of modified milk, irrespective of the source from which such milk is derived. That is certainly not the view held in Liverpool, where the establishment of these depots has been made an engine to get better milk supplies. Even assuming that we must remain subject to unsuitable conditions on country farms, that does not follow.

It is probable that the great majority of infants would thrive very well on ordinary milk without any modification whatever, and in any case a mother should know how to manipulate milk to render it suitable.

The following handbill has, therefore, for some years been handed by the District Registrar to every mother coming to register the birth of a child :—

How Infants should be fed,

with some additional observations.

1. Infants should, whenever it is at all possible, be fed at the breast for a period of six months at least; but, if that cannot be done, for as long a period as may be. Breast milk is, almost always, much more wholesome for an infant than cow's milk.

2. They should have the breast not oftener than every two hours during the day, and every four hours during the night. At the end of three months they should be suckled at longer intervals. When they are fretful or suffering from indigestion, it will often be found that they are being overfed, and diminishing their diet will then put them right.

3. The mother should, in order to supply wholesome milk to her child, partake only of plain and wholesome food, avoiding intoxicating drinks such as spirits and beer. If she suffer from sore nipples, they should be washed with warm water after the child has fed, and some glycerine should then be applied.

4. When, from want of milk, or from an absolute necessity of going to work, a mother cannot suckle her infant, the next best thing, as a rule, is to feed it on cow's milk, prepared thus:—

Half a pint of good fresh milk, and one pint of water with a small teaspoonful of white sugar are mixed and boiled, and then placed in a clean jug, covered with a clean cloth. Four tablespoonfuls of this should be placed in the feeding bottle each time it is used, and after each time the child is fed the bottle should be cleaned, or a clean one used. The infant should not be fed oftener than every two hours in the day time, and every four hours during the night. This will be the diet up to the age of six weeks.

When the child is at least six weeks old, one pint of cow's milk may be added to one pint of water, and eight tablespoonfuls used to each meal, the interval between meals being increased.

At the ages three to six months, two pints of cow's milk should be mixed with one pint of water, eight tablespoonfuls being used to each meal. The intervals between meals, and the quantity used at each meal, may be increased as occasion requires. But it is necessary always to bear in mind the danger of over-feeding.

In all cases the mixture of milk and water should be boiled and kept in a clean jug, as before mentioned. Only a small quantity should be got ready at one time.

Up to the age of six months it will generally be found better to use no other food whatever than milk. On no account should "pobbies" or other solids be given.

5. The above directions furnish a food on which children may thrive, but it is very poor in cream as compared with mother's milk, and those who can afford the extra milk and trouble would do better to proceed in the following manner:—

For infants under six weeks of age purchase a pint of fresh rich milk in the evening and half a pint in the morning.

Place the evening pint in a shallow earthenware bowl, scrupulously clean, which should be placed in a basin of water for coolness, and cover the bowl with a plate.

In the morning skim four tablespoonfuls of cream from the bowl and add it to the freshly purchased half pint. Add also a small teaspoonful of sugar, and as much bicarbonate of soda as will stand on a sixpenny piece.

Boil the mixture of fresh milk, cream, sugar, and bicarbonate of soda and stand it in a jug, freshly cleaned out thoroughly with boiling water, and, if necessary, with a little washing soda in the water. This preparation will have to last 24 hours, and four tablespoonfuls should be placed in the feeding bottle each time it is used; and after each time the child is fed, the feeding bottle must be cleaned with hot water, or a clean one used. The infant should not be fed oftener than every two hours during the daytime, from six in the morning till eight in the evening, nor oftener than every four hours at night.

When the infant is six weeks old, a pint of fresh rich milk should be purchased in the evening as before, and creamed, but a pint of the same milk will now be required in the morning. Cream as above, and add the cream to the morning's pint of milk, also a teaspoonful of sugar, and a little bicarbonate of soda as before.

Eight tablespoonfuls may now be used for each meal, passing gradually from four to eight tablespoonfuls. The infant may now be fed at intervals of three hours during the day.

After the infant has reached the age of three months the directions are the same as those given in 4.

In the above plan, the mixture is prepared for 24 hours, and, if carefully kept, will, after boiling for five minutes, be safe for this period. It is better, however, to bring what is left of the mixture at the end of 12 hours again to boiling point.

There need be no waste of milk. The pint of milk which has been creamed, and which is left over from the infant's mixture, may be made into a pudding or used for other cooking purposes.

Mothers must be careful to add bicarbonate of soda to the milk (used for baking), and not washing soda, which is poisonous.

6. When condensed milk is used, mothers should be careful to get only the best brands, and the unsweetened milk should be preferred. They should carefully examine the labels on the milk tins, as, by the new Sale of Food and Drugs Act, all condensed milk not made from whole milk must have attached the words "*Machine made milk*" or the words "*skimmed milk*," in legible characters.

The milk should be diluted according to the directions given on the tin.

The diluted milk, especially if unsweetened milk is used, should be tried undiluted. If the infant cannot digest this it should be tried with an equal part of water. Care must be used to protect the milk after opening the tin.

7. The bottle used should be of the shape shown in the woodcut. The india rubber teat comes off, can be turned inside out, and can be easily cleaned with water containing soda. The bottle and teat should be cleaned after each use, the bottle with scalding water. Bottle, teat, and a cleaning brush may be had for about a shilling. It is absolutely essential to keep the bottle and teat clean.

9. In one of the Health Lectures for 1881–2 on "Infant Feeding," the following diets are given as useful :—

Diet from Six Months to Twelve Months Old.

Five Meals a Day.

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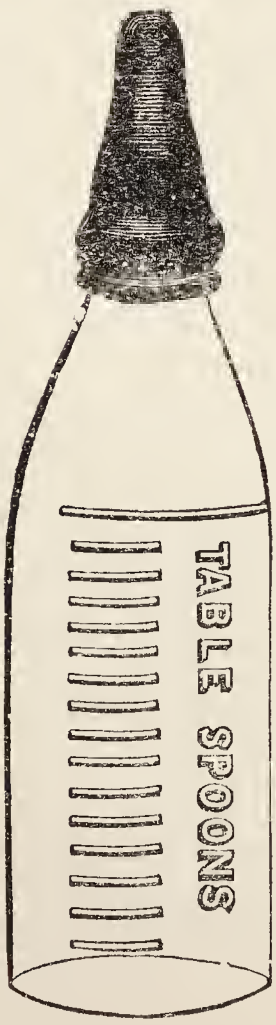

First meal, 7 a.m.—One teaspoonful of some farinaceous food to about twelve tablespoonfuls of sweetened milk, mixed and well boiled.

Second meal, 11 a.m.—The same quantity of pure milk.

Third meal, 1-30 p.m.—Same as first.

Fourth meal, 5-30 p.m.—Same as second.

Fifth meal, 10 p.m.—Same as first.

Diet for a Child from 12 to 18 Months Old.

First meal, 7 a.m.—Bread and milk, or oatmeal or hominy porridge, with plenty of milk.

Second meal, 11 a.m.—Twelve tablespoonfuls of milk.

Third meal, 1-30 p.m.—Bread crumbs and gravy, or a slackly boiled egg and bread and butter.

Fourth meal, 5-30 p.m.—Bread and milk.

Fifth meal—Milk to drink.

For further instruction, the lecture alluded to, which may be had at John Heywood's for 1d., should be consulted.

9. Infants should not be placed on the floor, as they are thus exposed to draughts and infectious dirt. They should be suspended at a height of at least two or three feet from the floor.

10. They should be warmly clothed, but not with many clothes. Their clothing should not fit tight about the body, but cling loosely, so as to give

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* Maw's feeding bottle is no doubt a better form than that shown in the sketch as it admits air. There are also others of a suitable nature on the market, such as Allen and Hanbury's.

free play to the lungs. The limbs should be covered equally with the body. To allow a child to be cold is as bad as to deprive it of food, while giving it all the effort of digestion.

11. Mothers are strongly warned against giving children soothing medicines to send them to sleep.

12. When an infant continues to suffer from indigestion or diarrhœa, in spite of every care in feeding it, the mother should consult a medical man, who will advise her how to act.

JAMES NIVEN,
Medical Officer of Health.

Public Health Office,
Town Hall, Manchester,
April 23rd, 1900.

It may be regarded as rather a task for the ordinary young woman to manipulate milk in the manner directed.

A special course of practical instruction was, therefore, most kindly given by Mrs. Crosbie to the health visitors of the Manchester and Salford Ladies' Public Health Society in the practical manipulation of infant food. The health visitors receive a list from the Public Health Office of all children born in their respective districts, and are directed to call and give the necessary practical instruction to those mothers who are wishful to receive guidance.

The following is a resume of the practical instruction to be given, but these directions are useless except when the health visitor demonstrates and explains every step :—

CITY OF MANCHESTER.

FURTHER DIRECTIONS FOR INFANT FEEDING.

For the use of the Health Visitors of the Ladies' Public Health Society.

If an infant thrives on it, whole milk may be used without alteration.

In that case the following points must be carefully attended to :—

The milk should be boiled as soon as possible after it is received.

The jug into which the milk is received should be placed in the coolest place available, which also must be kept scrupulously clean. After each time of using it should be washed out with clean cold water and then scalded out. It should then be covered over with a clean cloth until it is required. When the milk has been poured into it, the cloth should be replaced. For the sake of coolness the milk jug may profitably be kept in a basin containing cold water.

One feeding bottle is required having a short teat, and Maw's feeding bottle will be found useful.

When the milk is to be used put it into a suitable saucepan and boil it gently for ten minutes. A double saucepan will be found most valuable, as the milk can be slowly raised to boiling point and kept at that without boiling over, or burning. Then pour it into a perfectly clean jug, and cover over with a clean cloth.

The amounts required for each feed and other directions are given in the feeding handbill. The necessary amount is poured from the jug into the feeding bottle, the teat screwed on, and the feeding bottle stood in a jug of hot water, until after shaking it tastes just warm enough. It is then ready for use.

As soon as ever the child has had its feed, the teat is at once unscrewed and thoroughly rinsed with hot water which has been boiled, and the bottle is treated in the same way, a brush being used if necessary. If a brush is used it must be cleaned frequently in boiling water, occasionally with the addition of soda.

The teat and bottle are then placed in a dish containing water which has been boiled, until again required when the same process is repeated. This dish should be covered over and kept away from dust.

The teat and feeding bottle must also be cleaned once a day with soda and very hot water, which may usefully be done first thing in the morning.

If the child does not thrive on ordinary milk, either the milk is poor or the method of feeding requires to be altered.

To test the quality of the milk it may be placed in a tall glass and allowed to stand for twelve hours when about one-tenth of the height should be occupied with cream. It should also taste and smell sweet.

It is no sufficient precaution against indigestion or diarrhœa to feed an infant carefully if its clothes are allowed to remain dirty, especially after it has been sick.

It is also very necessary not to put the infant on the floor unless the floor is scrupulously clean and free from draughts. If its hands are allowed to become dirty, it will suck off the dirt, and all the benefits of feeding may be destroyed.

If the infant cannot take undiluted milk, and the mother can follow the directions given in part two of the feeding handbill, she should try that method, the same routine being pursued with the mixture made in the manner described in that bill, as is given above for ordinary cows milk.

By Order,
JAMES NIVEN,
Medical Officer of Health.

Public Health Office,
Town Hall, Manchester,
September 6th, 1902.

No general directions are of any use. The instruction must be direct and practical.

Three years ago the Sanitary Committee communicated with the School Board, suggesting that a scheme should be prepared whereby the teachers might give practical instruction to the older girls at Board Schools in infant feeding, and the manner in which such instruction could be commenced was discussed. The subject was referred to a Sub-Committee, and remained in abeyance.

It was subsequently revived by Dr. R. W. Marsden, and, possibly as the result of his efforts, a lady was appointed to give instruction to the older girls in some elementary schools very much on the lines indicated. Her instruction to the children embraces, I am informed, practical demonstrations in infant feeding and in house cleansing. This is what is wanted—instruction, elementary indeed, but practical and thorough.

It might be supposed that, in insisting on the supreme importance of this step, I am minimising the value of the distribution of modified milk. Nor is it easy to avoid such suggestion. I do regard the education of the older girls in the practice of house cleansing, management of infants, and infant feeding as of far more consequence than the distribution of sterilised milk. The tendency of girls at the present time is to avoid service and seek industrial employment, or, at all events, employment which takes them away from a knowledge of the duties of a house-wife and of the wants of children. It seems to me that the very first thing is to make an effort to restore the natural order of things. A woman's function is to produce and rear children, and it is one which most women have to fulfil. It is of primary importance that she should know what is essential to the fulfilment of her first duty.

We are thus brought round to the subject of the Municipal modification and sterilisation of milk, and to the supply of such milk in such a shape as to reduce to a minimum the risks which infants need be subjected to in the diarrhœa season.

The inquiries which we have made do not appear to show that diarrhœa can be avoided by boiling milk, or by the use of condensed milks. Not a few children fed only on the breast suffer.

It appears certain that children are attacked with summer diarrhœa for reasons which may baffle the application of sterilised modified milk to the prevention of this disease.

Unless the general management of the infant is attended to, it will find means to suck in filth, and will get diarrhœa in spite of the modified milk.

It thus becomes exceedingly difficult to assess the value of this form of milk supply for infants.

It may be put down as axiomatic that a bad milk cannot be made wholesome by sterilisation and modification, and the Medical Officer of Health for Liverpool has carefully insisted on this.

If the supply of modified milk is to become a valuable aid in combating the disease, it will be necessary to see that the conditions laid down for its use are fulfilled, and also to ascertain, at all events for a time, the results of its use.

This demands a staff of visitors and the keeping of careful records.

It does not follow that this should not be done, but the necessities of the case require to be faced.

If this is carried out, the mother who desires to feed her infant on modified milk is subjected to a certain amount of trouble, and is liable to give it up.

It is probable that a much greater use of modified milk will be attained where practically no supervision is exercised, and possibly in this way a maximum degree of usefulness will be attained. But it will be impossible to ascertain approximately how much good is being done. The statistics so far published are not very convincing.

I am not at all certain that much advantage is, in general, obtained from the modification of cows milk, if the cows milk be fresh. No doubt, in particular cases, the milk requires modification.

If success attends this movement, it will be taken up by private dealers, and any kind of material may be used.

All these objections are brought forward, not that I doubt the great advantage of being able to get good pure fresh milk modified in such a manner as will benefit sick children, or assist in making infants healthier and better able to resist disease, but that I wish to insist that nothing should be allowed to interfere with the practical education of girls and young women in the technique of infant feeding ; or with the need for greater pressure being exerted towards procuring a cleaner milk supply, protected by cooling against rapid deterioration.

It may very well be argued that it is quite possible to combine the two movements, one for the education of girls and young mothers, in the technique of infant feeding, and the other for the supply of sterilised milk in separate feeds, so diminishing the amount of the work which the mother has to do, while equally educating her in the need for care. In Liverpool the supply of milk to the sterilising depots is made dependent on the cleanliness and goodness of the milk supply, and one objection to sterilisation is in this way to some extent removed. And I do not dispute that children's hospitals would find a municipal depot for the modification and sterilisation of milk very useful.

But if this movement is to be followed in Manchester it should be with a distinct understanding to the following effect :—

1. The milk must be obtained from farms kept under inspection by the Corporation, and preferably managed by the Corporation.

2. When modified and sterilised it should be sold at paying prices except to persons willing to submit to certain rules.

3. These rules should include systematic weighing of the infant, inspection of the house, and supervision by officers of the Corporation.

4. A written undertaking must be given to keep up the feeding of the child for a period of not less than three months with milk obtained from the depot; to give the infant no other food whatever, and if it is desired to give up the method of feeding to lodge at the Health Office a statement of the reasons why the mother desires to be released from her undertaking.

5. The person assisted must also undertake to carry out the other instructions given by the visiting officer of the Corporation in the management of the infant.

6. The Corporation to provide adequate means of supervising the application of the milk supplied, and to keep a record of the condition of the children supplied with modified and sterilised milk.

7. Where the milk is supplied at a paying price no supervision should be maintained or agreement entered into.

I am by no means of opinion, however, that the supply of humanised and sterilised milk can at all relieve us from the procedures which we are at present adopting.

Additional administrative aid will, certainly, be required by the Health Office in working a Municipal supply of modified and sterilised milk.

TUBERCULOSIS AND MILK.

I beg to submit my report for the twelve months ending December 31st, 1902.

It may be well to first state my chief duties—(1) Inspecting the Manchester Cowsheds and Dairies as to their compliance with Manchester Regulations made under the Dairies, Cowsheds, and Milkshops Orders; (2) Carrying out the duties of Veterinary Inspector in the working of the Milk Clauses contained in the Manchester General Powers Act, 1899.

The latter duties include the inspection of the cows in the City cowsheds, as well as the cows on the farms outside the City boundaries from which tuberculous milk has been sent into the City.

Manchester Cowsheds.

In carrying out the regular inspection of City farms under the Manchester Regulations, 416 visits have been paid, and 651 inspections of cowsheds made.

The results of these frequent visits are undoubtedly most satisfactory, and I have found little to complain of during the year, the high standard of cleanliness desired being certainly nearer attainment, though not actually acquired.

In those cases, where the attention of the dairyman to the requirements of the regulations has not been as constant as could be desired, it is usually found effectual to point out that a prosecution for failing to comply with the law may follow, and that the ensuing publicity would have disastrous results on the milk-round.

There is, however, much yet to be done, and, as has been pointed out in previous reports, the work of keeping absolutely clean an insanitary cowshed is an arduous task. Some cow-keepers have in fact complained that the standard of our requirements is too high, though these complaints have not been very numerous. But it has been pointed out that a high standard of cleanliness would be insisted on, and that the responsibility of occupying a cowshed which was difficult to clean was the cow-keeper's.

I have strongly urged the farmers to limewash their buildings more frequently, instead of merely twice a year, as required by the regulations; and in a number of instances they have done so.

It would be desirable to have, if possible, every cowshed floor washed daily, but this the farmers object to, owing to the fact that it makes a considerable difference to their water rate, as at all the farms where the municipal water is laid on the water passes through a meter.

The following notice is now suspended in every cowshed within the City boundaries :—

CITY OF MANCHESTER.

Notice.

The Dairies, Cowsheds, and Milkshops' Order requires every dairyman or cowkeeper, *under a penalty of £5*, to observe, among others, the following regulations :—

1. That the cowshed be kept in a perfect state of cleanliness.
2. That the cows, and particularly the cows' udders, be kept perfectly clean.
3. That the milker's hands be well washed before milking.

For further particulars consult the Manchester Regulations.

(Signed) James Niven,
Medical Officer of Health.

Public Health Office,
Town Hall, Manchester,
November, 1902.

The result of hanging these notices has been, I think, excellent. There is now no excuse, such as pleading ignorance, for non-observance of the regulations.

At very few of the Manchester farms are there any conveniences for the cooling of the milk before sending it out. The public themselves are in some measure to blame for this state of affairs, as they will insist on having the milk warm as it comes from the cows, although they also complain that during the summer months the milk will not keep for above 12 hours.

The great majority of the cowkeepers know nothing of the value of refrigeration. I have repeatedly urged on the dairymen the necessity for the erection of cooling apparatus, but with absolutely no success. One can hardly blame them if it means loss of trade.

It has already been mentioned that in nearly every case the water used at the farms is derived from the town's supply. In one case, however, I had cause to suspect the water at one of the farms, the supply being from a pump-well situated adjacent to three pigstyes and two pail-closets. A sample of the water was submitted for analysis, and found to be badly contaminated. The case was reported to the Medical Officer of Health, and an order was made on the farmer to discontinue the use of the present supply and to have the town's water laid on. This order has been complied with.

The work of reconstruction of the insanitary cowsheds is making steady progress, though a fair number yet remain to be dealt with.

The faults found are chiefly deficient ventilation and light, bad drainage, bad floors, and overcrowding.

Very few of the farms are provided with a properly constructed middenstead, and, in addition, the yard surface is also in a bad state.

In these cases the farm is visited by the Veterinary Surgeon, accompanied by Mr. J. C. Hudson, C.E., and the buildings are measured.

Where reconstruction to comply with the regulations is possible, a plan is prepared for the assistance of the farmer, though he is, of course, at liberty to alter and reconstruct on other lines so long as the regulations are complied with.

The chief requirements in the reconstructed farms are: sufficient air space, efficient ventilation, plenty of light, impervious floors.

In addition, where possible, the Medical Officer of Health requires water to be laid on in the cowshed, the stalls to be single instead of double, and the divisions of sufficient height to prevent the animals licking one another.

Earthenware feeding troughs are also asked for, to replace the wooden tubs formerly used.

During the year 1902 19 farms were dealt with, and the position at the end of the year was as follows:—Eight farms have been closed, and are no longer used for cow-keeping. Six of these were closed because it was either impossible to reconstruct the buildings, or they were too dilapidated; one was closed by the Parks Committee, who took over the Crowcroft Estate; and one was purchased by the Lancashire and Yorkshire Railway Company for extension. Of the remaining 11 cases in which specifications were sent, in six the work has been completed, at four others the work was in progress, and at one farm nothing had been done.

Other ten farms have also been measured with a view to reconstruction to comply with the Manchester Regulations.

When a plan showing alterations or rebuilding to comply with the bye-laws is sent out, a specification is also sent with the plan, and the requirements set out in detail. Every effort is made to keep down expenses as much as possible.

The Medical Officer of Health asks that the floor should be laid with good Portland cement concrete, 6in. thick, with a skimming of cement 1in. thick. This, so far as I can see, is the most satisfactory material to use—it is certainly objected to by the farmer, but his reasons for objecting are vague.

It is not advisable that the skimming of cement be too smooth, it should be made of fairly rough material, and should be deeply grooved to prevent the animals slipping.

In two cases during the year, in cowsheds where the skimming had worn very smooth and was ungrooved, cows have fallen, and a fractured pelvis has been the result in both cases.

In providing a good stall, a wide heelstone is of considerable assistance in enabling a cow to keep her feet. A heelstone 3in. thick is really all that is asked for, but the ordinary kerbstone 12in. wide by 9in. thick, such as is used on the edge of pavements, makes an excellent heelstone.

These points have been specially mentioned, as a great many farmers object to the concrete flooring simply because it is slippery. Concrete is, however, when properly laid, the most suitable material for the floor of a cowshed.

Other details providing for light, ventilation, drainage, etc., are, of course, also given in the specification sent.

Manchester Cows.

During the year 1902 a total of 5,649 inspections of cows were made at the town cowsheds. This indicates, of course, that most of the cows have been examined more than once, in fact some will have been inspected a dozen times.

There is no attempt at examining all cows the same number of times, as after the first few visits the Veterinary Inspector is able to form an opinion as to which of the farms require the most frequent inspection, and these are visited very much oftener than others.

There is no doubt that, taken as a whole, the cows in the Manchester cowsheds are an excellent lot, and very much in advance of what is seen at the country farms.

The great majority are shorthorns, and a number of these, in fact the best milkers, come from Ireland, and a good many from Shropshire and Cumberland.

The number of Welsh cattle kept is increasing. They are certainly healthy and hardy, but are scarcely model dairy animals, the half-bred Welsh cattle being better for dairy purposes.

A number of the smaller milk sellers—those that have only 6 or 7 cows—buy their cattle in Salford market, and this is discouraged as much as possible, as there is, so far as I have seen, a large percentage of diseased animals sent into this market, and the temptation to buy because a cow is cheap is very hard to resist.

The cleanliness of the cows is on the whole satisfactory, and the number of cow-keepers who regularly groom their cattle has steadily increased. No doubt in course of time grooming the cattle will be as common as the grooming of horses. It is very necessary, and if it is done regularly every morning there is very little trouble in keeping a herd of cows clean.

Here it may not be out of place to make some reference to the milkers, who, in some districts, have to be carefully watched.

In some of the districts of Manchester—I refer more particularly to those districts adjacent to the Workhouses—sometimes a very dirty class of milkers is found, and particularly in the large dairies, where a number of milkers are employed. These men from the Workhouses are taken on to work, and directly they earn a little money expend it in drink.

Their clothes are often very filthy, and their habits are not much better. They are certainly made to wash their hands, but this is hardly sufficient.

Many of them are anything but expert milkers, and in drawing the milk I have seen them squirt it in all directions but the right one.

All milkers should be required to wear a clean milking smock. These smocks are very cheap, and the farmers should be required to supply them for the use of his milkers.

It is satisfactory to report that during the year no cow was found in the City cowsheds suffering from tuberculosis of the udder.

In two cases, however, the owners were advised to have cows slaughtered, there being clinical evidence that the animals were suffering from advanced tuberculosis. Both cows were slaughtered in the Manchester Abattoirs, and the carcases were inspected by the Chief Meat Inspector, who pronounced the meat to be unfit for human food.

In several cases I have given the farmers advice on the foodstuffs they were using, and also, occasionally, as to the treatment of individual animals from a milking point of view. There is, I am glad to say, a growing tendency (slow, it is true) among the farmers to use less brewers' grains. I do not mean that they are inclined to discontinue the use entirely—this is not, I think, necessary—but smaller quantities are given, and these fresh. On the other hand, in some districts the use of cabbage trimmings is increasing. These are obtained from Shudehill Market, where, I am informed, there is a great deal of spitting. Cabbages are no doubt an excellent article of diet for milch cows when clean.

There is one point which may be mentioned here, and that is the housing of horses in cowsheds. At some few farms in Manchester, where all the available stable room is occupied, a horse, or sometimes two, is stalled in a cowshed. This is, I think, a most objectionable practice, but unfortunately the Dairies, Cowsheds, and Milkshops Order makes no provision. The Act provides that no swine may be housed in a shed containing milch cows, but no other animal is barred.

No animal working hard, as most horses do, should be housed in a building in which a quantity of milk is handled. The emanations from the body and the odour of the urine are particularly pungent, and these odours are easily assimilated by milk. In addition to this, during the grooming a considerable amount of dust is disturbed, especially during dirty weather, when the horses' legs get covered with mud, which is allowed to dry before grooming.

The Manchester Milk Clauses.

These clauses are embodied in the Manchester General Powers Act, 1899, and have already been given in detail in previous reports.

The same methods of procedure under the clauses have been continued during the year as were set out in the last three Annual Reports, and are briefly as follows:—Samples of milk are taken at the Manchester Railway Stations, or elsewhere within the City, by the Food and Drug Inspectors. These are submitted to Professor Delépine for bacteriological examination. All samples reported by him as having been found to cause tuberculosis are followed to their source at the farm by the representative of the Medical Officer of Health, accompanied by the Veterinary Surgeon.

The Veterinary Surgeon examines all the milking cows on the farm, and takes samples from all cows having diseased or suspicious udders. The special samples are taken in sterilised vessels provided by Professor Delépine, with every care to avoid extraneous infection. These samples are, in turn, submitted to Professor Delépine for bacteriological examination, and in this way the fact of a cow having a tuberculous udder is definitely proved. Samples from cows found to have suspicious or diseased udders by clinical examination, without previous station samples, are examined in the same way.

In those cases which are not cleared up by the finding of the tuberculous udder, a control sample from the whole herd is taken.

It has been already stated that 5,649 inspections of cows were made in Manchester cowsheds during the year. On these inspections no cow was found to be suffering from tuberculosis of the udder.

During the year 420 samples of milk have been taken at the various Manchester railway stations by the Food and Drug Inspectors, and the number of farmers represented in this total is 345.

Of these 345 farmers, 196 reside in Cheshire, and 25 of them (12·72 per cent.) sent tuberculous milk; 104 live in Derbyshire, and 9 of them (8·65 per cent) sent tuberculous milk; 25 live in Staffordshire, and 1 of them (4·01 per cent) sent tuberculous milk; 12 live in Lancashire, and 1 of them (8·31 per cent) sent tuberculous milk; 3 live in Shropshire, and none of them sent tuberculous milk.

In addition to the above three Shropshire samples, there were five other samples left over from 1901 to be dealt with. All these samples were taken on the same date, and were of milk from one dairy. Three of these five samples were proved to cause tuberculosis, and the remaining two caused the death of the experimental animals from acute septic infection.

In looking through the above figures it will be seen that a fair percentage of the farmers have had their milk tested more than once, for 420 samples have been taken from 345 farms.

From returns supplied by the farmers themselves to the Public Health Office, the estimated number of cows at these 345 farms is 6,210 (equal to an average of 18 cows per farm); and in following up the 36 tuberculous station samples the udders of 1,236 cows have been examined.

In addition to the above, in following up the 3 tuberculous station samples from the Shropshire dairy (mentioned earlier), 2,420 cows were examined at 75 farms.

As a result of following up the tuberculous station samples, a total of 3,656 cows were inspected.

Of the milk tested from the 345 farms during 1902, a total of 36 samples were reported by Professor Delépine as having been found to cause tuberculosis, giving a percentage of 10·43.

As the result of following up the tuberculous station samples a total of 31 cows were found, and pronounced to be suffering from tuberculosis of the udder. Sixteen of these cows were slaughtered in my presence. Of the 16 carcases examined, 11 were found to be extensively diseased and unfit for food, and the remaining five were good carcases. This leaves a total of

15 cows whose ultimate disposal is not accounted for. Most of them, however, are sent into the open market and sold. In some of these cases an attempt was made to trace the animals, but with no result. These 31 cows were found on 29 farms, so that in two cases 2 cows were found on a farm

Two farmers have been prosecuted under the Manchester Milk Clauses for having failed to give notice in writing to the Medical Officer of Health for Manchester of the presence on their farms of cows with well-marked tuberculosis of the udder, and both cases were heard at the City Police Court. In the first case a fine of 20s. and costs and three guineas extra costs was inflicted, and in the other a fine of 40s. and costs and five guineas extra costs.

In addition, one farmer was summoned for failing to render reasonable assistance to the Veterinary Surgeon, insomuch as he refused to bring in his cattle to be inspected, and ordered the Veterinary Surgeon off the premises. He was prosecuted under section 6, sub-section *b*, of the Milk Clauses, the case was heard at the Macclesfield County Police Court, and a fine of £3 and costs was imposed.

There is no doubt that, as time goes on, the detection of tuberculosis of the udder becomes increasingly difficult. The class of cases met with at one time are now almost never seen—I refer to the well-marked cases, in which there was no difficulty in diagnosis.

In by far the greater proportion of cases now found a reliable diagnosis is impossible without bacteriological examination. The cases found being so slight, it is advisable, in making an inspection of a herd of dairy cows, to make one's observations as complete as possible, always remembering that you can only form a suspicion, and that it is for the bacteriologist to say whether the suspicion is well founded or not. In several cases I have taken samples from cows whose udders have shown no sign of disease, my suspicions being perhaps aroused by some other symptom or combination of symptoms external to the udder, and the milk has been found to be tuberculous. One can take no great credit for finding these cases, but it is necessary to remember in examining a herd of cows for tuberculosis of the udder that it is not sufficient to rely upon the apparent condition of the udder itself.

In these cases the advantage of a control sample is well shown, and has been made full use of, the control sample being taken from the mixed milk of all the cows *en bloc* or in sections, after excluding the animals from whom special samples have been taken. It is also a rule now to give instructions to the Food and Drug Inspectors to take additional samples of milk from the milk of farmers, whose milk has been found tuberculous, and in whose herd a cow with tuberculosis of the udder has been discovered, to make sure

(1) that another case has not been overlooked, and (2) to be sure that the animal found has been removed from the milking herd and isolated according to the requirements of the Act.

When a cow with tuberculosis of the udder has been found, the farmer is written to by the Medical Officer of Health urging that she be slaughtered as soon as possible, and pointing out that it is unwise to think of fattening such a cow, as it is highly probable that the disease will extend and render the carcase unfit for sale.

It is unfortunate for the farmers that this advice is not acted on more often than it is, as I am sure it would be a source of considerable saving to them; the carcase would stand a greater chance of being passed as fit for human food, and, even if not passed, the cost of food saved would be considerable. Unfortunately, the farmers prefer to keep these animals, give them the best of food, and try to fatten them, with the result that in the long run the carcases are found to be worthless.

On the whole, I may say that the cows examined at the country farms have been a fairly satisfactory lot. They do not, as I have already said, come up to the standard of the cows in the town cowsheds, but they are well fed, and I think an increasing amount of attention is being paid by many farmers to this point.

One or two points have, however, occurred to me in connection with these country cows.

In some instances, especially where the farmer has not been brought up from youth as a dairy farmer, it is found that he has a considerable proportion of cows in his sheds which are not at all suitable for dairy cows. They are physiologically incapable of producing a quantity of good rich milk. Perhaps they do not come of a milking strain, and would really be of more profit to the man who merely feeds stock for the butcher. The farmer knows that in order to produce a good supply of milk a cow must be liberally fed; but my point is that in many cases he does not exercise that judgment in buying which is necessary to success as a dairy farmer.

Further, it is necessary that farmers should individualise animals more than they do in feeding.

The farmer too often leaves it to some small boy or ignorant farm hand to feed his cows, so that, irrespective of a cow's milk-producing powers, each cow receives the same amount of feed. On many occasions, when I have watched animals being fed, I have pointed out the necessity of giving the heavy milker more stall food than the animal which gives only a small quantity.

With regard to the cleanliness of the cows, I think decided progress is being made, at any rate in Cheshire. It is not, usually, the large farmer with forty or fifty milking cows who has his cows dirty, but the small man with about eight or ten cows, who has probably to go elsewhere to work from morning until night, and has to leave the care of the cows to his wife or children. It is unfortunate, so far, at all events, as the condition of their cowsheds is concerned, that there is a very large number of these small farmers.

I am strongly of opinion that far too great a proportion of the milk supply is in the hands of these small farmers. As a class they are ignorant and prejudiced to a degree, and advice which is offered is received with the greatest contempt.

Legal restrictions would, of course, operate very hardly on a large number of these men, and a great amount of hardship would be produced; but it would be far better for our towns if the milk supply was in the hands of a better class of men, who are not averse to progress.

With regard to the sanitary condition of the cowsheds, I am afraid we remain where we were twelve months ago. In Cheshire, certainly, greater attempts are made at cleanliness, but this is merely the result of greater labour on the part of the farmer.

The cowsheds, for the most part, are dark, ill-ventilated, and either badly drained or not drained at all.

It will be seen that I have merely alluded to Cheshire above. With regard to the other counties—Derbyshire, Staffordshire, and Shropshire—the conditions show no improvement at all. The cowsheds are, on the whole, decidedly worse than those in Cheshire. In many cases the cubic space per cow is only about 200 cubic feet.

In two cases during the year farmers from Derbyshire were summoned to appear before the Hospitals Sub-Committee, and an order was made in both cases to discontinue sending milk to Manchester. In both cases plans and specifications were prepared to show how the buildings could be sanitarily reconstructed. In one the specification was carried out, and the order was withdrawn, but in the other case nothing was done, and the order is still in force. I should mention here that in one rural district in Cheshire the local authority has made some attempt to carry out the Dairies, Cowsheds, and Milkshops Order, but it is desirable that the authority should advise as to reconstruction rather than leave it to the owner.

There is no reason why in the country cowsheds less air space per animal should be permitted than in the town shippons—in fact it should be the opposite, and the country cowshed, in which the early life of the animal is spent, should be properly constructed, allowing for a liberal supply of fresh air, When inspecting a country farm in connection with tuberculous milk, full particulars are taken of the general sanitary conditions, a plan of the cowsheds drawn to scale is also prepared, and a record of all kept in the office, so that at any time the desired information is at hand.

There are many ways in which these farms could be improved, exclusive of the cowsheds.

For instance, it is very rare indeed to find a farm where there is any suitable provision for the storage of manure: the yard surface is uneven, and dirty. At many farms the human excreta is also emptied on to this manure heap, which is adjacent to both the cowsheds and the farmhouse.

The water supply is very often of questionable character, and many wells are situated close to the manure heap, by the percolations from which the water is no doubt very often contaminated.

In some hilly districts, particularly the Peak of Derbyshire, there are practically no wells, the whole of the water being surface water collected into small ponds or reservoirs. The gathering ground is the pasture for the cattle, and the fæces, especially in hot weather, are not infrequently deposited actually in the water, for the animals get into the water in trying to escape from the various flies which annoy them. A large amount of droppings may be seen at any time round these ponds.

The house supply is usually derived from the same source—there being a second reservoir adjacent to the house, supplied from the first reservoir, which is some distance away, by means of a pipe.

It requires some contrivance to supply these hillside farms with pure water; but the existing supplies should certainly be either railed round or walled in to prevent the animals getting into the water—a small trough, supplied by means of a pipe from the reservoir, would be sufficient to provide the cattle with drinking water.

There are many other points which one might draw attention to—for instance, it is the custom at all country farms to refrigerate the milk before despatching it to town. This is usually done in a small open shed, which is not infrequently also the wash-house, there being a boiler in one corner, and is also used as a coal-shed—in some instances I have also seen this shed used as a store for potatoes, etc.

The cooling apparatus is left uncovered, and may or may not be wiped down before use. I have repeatedly urged on the farmers the necessity of having a properly enclosed dairy in which they might cool their milk, and using the dairy for no other purpose but handling the milk.

While urging on the farmers the necessity for absolute cleanliness in every detail, I have had several complaints made to me about the condition in which the cans are returned to them by the milk dealers in Manchester, and there is no doubt that in some instances they have serious cause for complaint, the cans returned being in a dirty condition, and smelling abominably. Such cans are very difficult to cleanse. If a milk dealer chooses to keep a farmer's can he should at least return it in a clean condition. This is, perhaps, a matter for local administration.

Again, there are a great many milk sellers who never remove the cans from the station, but merely call and transfer the milk to their own can or cans. In these cases the railway companies should see that the cans are promptly returned, and not allowed to lie about for days before being sent back.

While referring to the railway companies, it may not be out of place to make some remarks on the way in which the companies carry milk. It is quite time that some proper provision in the shape of cold-air vans was made for the carriage of milk. Generally, however, we see large quantities of milk coming in on open trucks, exposed to the full heat of the sun; in addition, at some stations, from which a large quantity of milk is sent to the City, a special truck (or trucks) is loaded, usually a considerable time before the train is due, the cans having no covering or protection whatever, so that the value of the refrigeration at the farms is to a great extent nullified. These are nearly always open trucks.

There is also a great want of cold storage at the distributing centres. It is common to find milk sent into Manchester in the evening, and standing on the station platform all night.

Appended are particulars of the disposal of all cows found suffering from tuberculosis of the udder during the twelve months ending December 31st, 1902:—

Case 85.—These two cows were found on January 16th, when following up a station sample reported as found to cause tuberculosis. The owner was written to by the Medical Officer of Health, and letters were also sent to the Medical Officers of Health for the County and District.

The owner made no reply whatever to the letter from the Medical Officer of Health, who again wrote and asked the farmer to slaughter the animals, pointing out that in one of the cows the diseased condition of the udder was well marked, and should have been notified.

On February 22nd the farmer replied that the cows had been sold.

The case was reported to the Hospitals Sub-Committee, who referred the matter to the Town Clerk to prosecute. The case was heard before Mr. Headlam at the City Police Court, and a fine of 20s. and costs, and £3 3s. extra costs, was imposed.

It was afterwards ascertained that these two cows were sold in Crewe Auction Mart, but their ultimate destination was not known.

Case 86.—This cow was found as the result of a previous tuberculous station sample. On January 19th the farm was visited by the representative of the Medical Officer of Health, accompanied by the Veterinary Surgeon. At the time of visit contagious abortion was rife among the cows.

The usual letters were sent by the Medical Officer of Health to the farmer and to the Medical Officers of the County and District.

On February 22nd a letter was received from the farmer saying that he had isolated the cow The Medical Officer of Health wrote in reply that the farmer had not answered his question as to what he intended doing with the cow, and also asking for an undertaking to slaughter in the presence of the Veterinary Surgeon.

On February 25th a further letter was received from the farmer saying he had isolated the cow and dried her off, but ignoring the question about slaughter.

Further letters were sent by the Medical Officer of Health, but no reply was received.

Case 87.—This cow was found as the result of a previous infected station sample. The Medical Officer of Health wrote to the farmer and pointed out the necessity for immediate slaughter in the presence of the Veterinary Surgeon, who had reported that the case was a well-marked one of tuberculosis of the udder, and also that the animal was a very old one.

The farmer replied that he had consulted his Veterinary Surgeon about the cow, and had made up his mind to have her slaughtered at the Harrington Bone Works on January 29th.

The Veterinary Surgeon attended on that date, and witnessed the slaughter of an aged white cow. The carcase was in an advanced state of tuberculosis, and was quite unfit for food. Mr. Percival, M.R.C.V.S., Macclesfield, was present at the post-mortem on behalf of the farmer.

Case 88.—In this case five samples of milk were taken at the railway station from separate cans, all from a large dairy in Shropshire.

Professor Delépine reported that three of these samples had been found to cause tuberculosis, and that in the other two cases the experimental animals had died of septic infection.

A representative of the Medical Officer of Health accompanied by the Veterinary Surgeon proceeded with instructions to request the names and addresses of the farmers supplying the milk which was sent to Manchester.

A magistrate's order authorising inspection was first obtained.

The dairy was visited, and the owner requested to supply the necessary information, so that the farms supplying the tuberculous milk might be ascertained. The owner of the dairy demurred, and at first refused to give the necessary information, saying it was impossible that his milk should be tuberculous when it was strained through at least three cloths.

Ultimately the names of some 29 farmers were handed to the Veterinary Surgeon, who proceeded to visit the farms, which he found for the most part in a very dirty state, the cattle being likewise dirty, and housed in buildings of a most insanitary character.

On the first two days three cows were found to be suffering from tuberculosis of the udder, these being on three different farms.

When the Veterinary Surgeon had inspected the 29 farms given he communicated with the Medical Officer of Health to the effect that it was desirable to inspect all the other farms supplying this dairy, and, acting on the instructions of the Medical Officer of Health, the Veterinary Surgeon again visited the dairy and asked for the remaining names and addresses.

This was at first refused, and the owner of the dairy came to Manchester and had an interview with the Chairman of the Hospitals Sub-Committee and the Medical Officer of Health. As a result of this interview the dairyman promised to give the names required.

The Veterinary Surgeon again proceeded to Shropshire, but on arrival the names and addresses were again refused. This was communicated to the Medical Officer of Health, by whose instructions the Veterinary Surgeon returned at once to Manchester on February 4th.

On the following day (February 5th), the Veterinary Surgeon was instructed by the Medical Officer of Health to call upon Mr.   , solicitor, acting for the dairyman, and in course of the interview the Solicitor wished to know whether the Manchester Corporation would indemnify his client against any loss which might accrue from the proceedings being taken.

The Veterinary Surgeon informed the Solicitor that the Corporation could not possibly entertain such a proposal, and that the measures taken were not more than were necessary in view of the state of affairs found. Ultimately the Solicitor informed the Veterinary Surgeon that if he would proceed again to W——— the desired information would be placed at his disposal.

On February 6th he returned, and was supplied with the names and addresses required.

It soon became evident, however, that special efforts had been made to cleanse the cowsheds, and even the cows, in anticipation of the inspection. In addition, the farmers would give no more information whatever in reply to the questions asked.

There can be little doubt that the delay obtained had been well utilised. No more cows suffering from tuberculosis of the udder were found.

The Veterinary Surgeon, however, was informed, and had no reason for doubting the informant, that a good many cows had been slaughtered, and that in a number of cases farmers had sent suspicious cows to their neighbours until after the visit of inspection had been made, and then brought them back again.

Altogether 75 farms were visited, containing 181 cowsheds, and 2,420 cows were inspected.

Of this total, the great majority of the cows and cowsheds were in a very dirty condition, and a considerable number of the cows examined, while not suffering from tuberculosis of the udder, were certainly otherwise tuberculous. The farms in fact, with few exceptions, were totally unfit for dairy farms.

Only a comparatively small proportion of the milk from the dairy was sent to Manchester, the remainder, a very large quantity, being sent to London, and as a result of this tour of inspection the dairyman stopped sending to Manchester for some time.

At a considerable number of the farms visited contagious abortion was rife among the cows. At one farm alone 34 out of a total of 47 cows had aborted.

With regard to the three cows found to be suffering from tuberculosis of the udder, the owners were written to by the Medical Officer of Health, who also communicated with the County and District Medical Officers. The owners replied that the cows had been removed from the milking herd, and were being dried off and fed for slaughter.

The Medical Officer of Health wrote and asked for a written undertaking to slaughter in the presence of the Veterinary Surgeon, but to these letters no replies were received, and the ultimate disposal of the cows was never ascertained.

Case 90.—This cow was discovered March 11th as the result of a previous station sample being found to cause tuberculosis.

On April 12th the Medical Officer of Health wrote to the farmer and also to the County and District Medical Officers.

The farmer replied, and asked to be allowed to keep the cow, as he had discontinued sending milk to Manchester, and was sending to London. The Medical Officer of Health replied that the cow should be slaughtered.

To this letter the Secretary of the Cheshire Milk Producers' Association replied, and asked that the farmer be allowed to sell the cow in open market, as times were hard, etc. The Medical Officer of Health replied that he could not agree, and that he was desirous of having the cow slaughtered.

The farmer again wrote on June 8th, asking again to be allowed to dispose of the cow. The Medical Officer of Health replied that this he would on no account sanction, but requested slaughter in the presence of the Veterinary Surgeon.

The cow was slaughtered at Market Drayton in the presence of the Veterinary Surgeon, who found the carcase to be very extensively diseased, and quite unfit for food.

Case 91.—These two cows were found on March 17th as the result of a previous tuberculous station sample.

The Medical Officer of Health wrote to the farmer and also to the Medical Officers of Health for the County and District.

The farmer replied that he would slaughter as soon as he could make arrangements.

The cows were slaughtered on April 20th at Macclesfield in the presence of the Veterinary Surgeon. One carcase was found to be extensively diseased, and unfit for food; the other carcase was, however, passed.

Case 94.—This cow was found on July 8th as the result of a previous infected station sample.

The farmer was written to by the Medical Officer of Health, and replied that he had sold her to a dealer near Knutsford, but only on the understanding that should she be proved to be suffering from tuberculosis of the udder she was to be slaughtered, to comply with the requirements of the Manchester Corporation.

The dealer who had bought the cow also replied that he intended to feed the cow for slaughter, and added that he did not sell milk.

The Medical Officer of Health again wrote to the farmer, and pointed out that having sold this cow did not transfer responsibility to the purchaser, but that he (the farmer) was still responsible.

The farmer replied that he was sorry he had disposed of the cow, but under the circumstances would do his best to get her slaughtered. After some further correspondence the cow was slaughtered in the Manchester Abattoirs in the presence of the Chief Meat Inspector, who condemned the carcase as unfit for food.

Case 95.—This cow was found as a result of a previous tuberculous station sample.

The farmer was written to by the Medical Officer of Health, who also wrote to the Medical Officer of Health for Staffordshire.

The farmer replied that the cow would be slaughtered at a knacker's yard near Stoke.

The Veterinary Surgeon attended and witnessed the slaughter of the cow, and found the carcase was badly diseased, and quite unfit for food.

Case 96.—This cow was found, July 30th, in the ordinary way when following up a tuberculous station sample.

In reply to the usual letter from the Medical Officer of Health, the farmer wrote saying that the cow would be slaughtered at Dunham Hill on Sept. 12th.

The Veterinary Surgeon attended and witnessed the slaughter of the cow. The carcase was in excellent condition—practically free from tuberculosis—and was fit for food.

Case 98.—This cow was found on August 7th when following up a previous infected station sample.

The Medical Officer of Health wrote to the farmer, and also to the Medical Officers of the County and District.

The farmer replied that the cow would be slaughtered as soon as he could make the necessary arrangements.

On September 12th the farmer wrote saying the cow would be slaughtered on the 17th inst., and on this date the Veterinary Surgeon attended and witnessed the slaughter of an aged cow. The carcase, being badly diseased, was quite unfit for food.

Case 99.—This cow was discovered on August 16th in the ordinary manner by Mr. Holburn, who visited in connection with a tuberculous station sample.

The farmer was written to by the Medical Officer of Health, who advised immediate slaughter. The farmer replied that this should be carried out at his earliest convenience. He wrote later, fixing September 24th for date of slaughter.

The Veterinary Surgeon attended and witnessed slaughter of an aged red cow, and found somewhat extensive but recent tuberculous lesions, rendering the carcase unfit for food.

Case 101.—This cow was found on September 4th when following up a previous tuberculous station sample.

The Medical Officer of Health wrote to the farmer, and to the Medical Officers of the County and District. The farmer wrote saying that both cows that the Veterinary Surgeon had taken samples from had been sold three weeks ago.

The Medical Officer of Health again wrote to the farmer asking to whom the cows had been sold, but to this letter no reply was received.

Case 104.—This cow was found on September 16th in the ordinary way when visiting in connection with a tuberculous station sample. On the same date another cow was found by the Veterinary Surgeon with clinical symptoms of tuberculosis, but not tuberculosis of the udder.

The Medical Officer of Health wrote to the farmer about the first cow mentioned, and also to the Medical Officer of Health for Cheshire and the Medical Officer of Health for the District.

The farmer replied that the cow would be slaughtered as soon as the necessary arrangements could be made, and later wrote saying that both cows would be slaughtered at the knacker's yard in Stockport.

The Veterinary Surgeon attended and witnessed slaughter of both cows. The carcases were badly affected, and quite unfit for food.

Mr. Schofield, M.R.C.V.S., Poynton and Mr. Gartside, M.R.C.V.S., Stockport, were also present at the slaughter.

Case 105.—This cow was discovered on September 18th by the Veterinary Surgeon when following up a previous infected station sample.

The Medical Officer of Health sent the usual letters, and received a reply from the farmer's brother that the farmer himself was away, but would write as soon as he returned. On October 26th a letter was received from the farmer saying that the cow had been sold five weeks previously.

The cowsheds at this farm were of a particularly insanitary character, and the Medical Officer of Health reported to the Hospitals Sub-Committee that he was of opinion that tuberculosis was likely to be caused in persons residing in the City by consumption of milk from this farm.

The Committee directed the Town Clerk to summon the farmer to appear before them to show cause why an order should not be made on him to discontinue sending milk to Manchester. The order was not to come into force for one month, to allow the farmer to see what his landlord would do for him; and at the same time a plan was prepared showing how the buildings might be suitably reconstructed.

The Agent for the Duke of ——— undertook that the requirements specified should be carried out; and this was satisfactorily done, and the order has since been removed.

Case 107.—This cow was found on September 25th in the ordinary course when following up a previous tuberculous sample.

The Medical Officer of Health wrote to the farmer and the Medical Officers of Health of the County and District.

The farmer replied that the cow would be slaughtered on November 3rd, 1902, at his own farm. The Veterinary Surgeon attended and witnessed slaughter of a red cow. The carcase, being extensively diseased, was condemned as unfit for food. In this case the cowsheds were of a particularly insanitary character, and the Medical Officer of Health reported to the Committee that he was of opinion that tuberculosis was likely to be caused in persons residing within the City by consumption of the milk from this farm.

The Hospitals Sub-Committee instructed the Town Clerk to summon the farmer to appear before them, and show cause why an order should not be made on him to discontinue sending milk to Manchester. The farmer attended on November 17th, and the said order was made.

Considerable correspondence passed between the Medical Officer of Health and the landlord of the farm as to the structural alterations necessary. So far, however, nothing has been done, and the order still remains in force.

Case 108.—The Superintendent of an institution in Manchester communicated with the Medical Officer of Health, and informed him that he had submitted a sample of the milk supplied to that institution to Professor Delépine, who reported that the milk had been found to cause tuberculosis.

The Veterinary Surgeon visited the wholesale dealer who had the contract, and asked for the name and address of the farmer whose milk was sent to this institution, and the required information was readily given.

The farm was visited by the representative of the Medical Officer of Health, accompanied by the Veterinary Surgeon, and a cow suffering from tuberculosis of the udder was found, the farmer being apparently unaware of the condition of this cow's udder, as it was subsequently ascertained that the farmer knew that his stock was going to be inspected, and in the meantime had put one cow which he suspected of having tuberculosis of the udder in another shed at some distance from the farm.

When Professor Delépine confirmed the result of the clinical examination, the Medical Officer of Health wrote to the farmer and advised slaughter.

The farmer replied that he had isolated the cow.

The Medical Officer of Health again wrote asking for an undertaking to slaughter, and the farmer replied that he could not afford the loss.

The Medical Officer of Health again wrote asking for the undertaking, and also wrote to Dr. Barwise, and enclosed full particulars of the case.

Dr. Barwise, Medical Officer of Health for Derbyshire, replied that he had written to Dr. Knox, the Medical Officer of Health for the Bakewell Rural District, asking him to have a watch kept.

On October 31st the farmer, accompanied by the wholesale dealer, had an interview with the Medical Officer of Health, and after a time gave an undertaking to slaughter as required.

However, on November 10th the farmer wrote to the Medical Officer of Health, and asked for permission to sell his cow to a Mr. W——. The Medical Officer of Health replied "Certainly, if the cow would be slaughtered in the presence of the Veterinary Surgeon." To this letter no reply was received.

On November 19th the Medical Officer of Health again wrote asking when the cow was to be slaughtered, and the farmer replied that the cow was still on the farm, and would be going probably in a few days.

On December 8th a letter was received from the farmer to say that the cow had been sold to Mr. W———, of Winster, for immediate slaughter.

The Veterinary Surgeon visited and saw Mr. W——— (Winster), who is a knacker and cattle dealer, and asked him what he intended doing with the cow. He said that he had paid £6 for her, and that she would be sent next day to a slaughter-house just outside Sheffield, where she would be slaughtered, and then taken into Sheffield.

This information was communicated at once by the Medical Officer of Health to Dr. Robertson, Medical Officer of Health for Sheffield, but the missing cow was not discovered.

Case 109.—This cow was found on October 2nd, when visiting in connection with a previous infected station sample. The Medical Officer of Health wrote to the farmer and to the Medical Officers for the County and District. On October 31st the farmer wrote saying that he would make all necessary arrangements, and would write again, which he did, fixing November 5th as date of slaughter, at Holmes Chapel. The Veterinary Surgeon visited and witnessed slaughter, and found the carcase to be absolutely free from disease, with the exception of the lesion in the udder.

This was possibly a case of inoculation, as there was a history of the cow having been gored in this quarter of her udder about six months previously, and the lesions were confined to a small area round the original injury.

Case 110.—This cow was found on October 8th, when following up a previous tuberculous station sample. The Medical Officer of Health wrote on November 1st to the farmer and also to Drs. Vacher and Rushton.

On November 19th the Medical Officer of Health again wrote to the farmer asking for a reply to his first letter. The farmer replied, and asked the Medical Officer of Health what his (the farmer's) position was with regard to milk selling. The Medical Officer of Health replied, and a letter was received from the farmer saying he did not feel inclined to slaughter his cow.

The case was reported to the Hospitals Sub-Committee, and the farmer was summoned for having failed to give written notice to the Medical Officer of Health that he had a cow suffering from tuberculosis of the udder. The case was heard at the City Police Court before Mr. Brierley, Second Stipendiary, who imposed a fine of 40s. and costs and £5 5s. extra costs.

Case 110A.—This cow was found as the result of a previous tuberculous station sample. The Medical Officer of Health sent the usual letters, and the farmer replied asking to be allowed to sell the cow. The Medical Officer of Health wrote urging slaughter, but nothing further was heard of the cow.

Case 111.—This cow was found on October 20th in the ordinary course when following up a tuberculous station sample. In reply to the usual letter from the Medical Officer of Health, the farmer agreed to slaughter.

The cow was slaughtered at Macclesfield on November 22nd, and the carcase, being fairly free from disease, was passed as fit for food.

Case 113.—This cow was found on October 22nd, when following up a previous tuberculous sample.

In reply to the letter from the Medical Officer of Health urging slaughter, the farmer replied that the cow would be slaughtered on November 24th at his farm.

The Veterinary Surgeon attended and witnessed slaughter of the cow, and found considerable recent disease in the carcase, which was unfit for food.

Mr. Percival, M.R.C V.S., Macclesfield, was present on behalf of the farmer.

Case 114.—This cow was found on November 4th as the result of a previous infected sample. The Medical Officer of Health wrote the usual letters, and the farmer replied by wire that his cow would be slaughtered at once.

Mr. Holburn, Chief Meat Inspector, witnessed slaughter, and found the carcase quite unfit for food.

Case 115.—This cow was found in the ordinary way when following up a previous tuberculous station sample. In reply to the letter from the Medical Officer of Health the farmer said that immediately after the Veterinary Surgeon's visit the cow had been killed in a slaughter-house in Blackburn.

Case 116.—This cow was discovered on November 18th when following up an infected station sample. The Medical Officer of Health wrote to the farmer and to the Medical Officers of Health for the County and District. The farmer replied that he would isolate the cow and try to feed her. He was asked to give an undertaking to slaughter in the presence of a Veterinary Surgeon, but after several letters the farmer replied that his attempts to dry the cow had been ineffectual, so he had sold her to a dealer.

Case 117.—This cow was found on December 1st in the ordinary way when following up a tuberculous station sample. In reply to the usual letters from the Medical Officer of Health the farmer agreed to slaughter, but did not carry out his promise.

Case 118.—This cow was discovered on December 9th when following up a previous infected sample. The Medical Officer of Health wrote to the farmer and to Dr. Vacher. The farmer agreed to slaughter, which was carried out on January 6th, 1903, in the presence of the Veterinary Surgeon, the carcase being found fit for food.

Case 120.—The cow in this case was found on December 29th in the usual way when following a previous infected sample. In reply to the letter from the Medical Officer of Health, the farmer wrote saying that he had isolated the cow and was feeding her. The Medical Officer of Health wrote asking for an undertaking to slaughter, but no reply has been received to this and subsequent letters.

J. W. BRITTLEBANK, M.R.C.V.S.

THE FACTORY AND WORKSHOP ACT, 1901.

The work done under this Act for the twelve months ending April 30th, 1902, is summarised in the Report of the Sanitary Superintendent for 1902, as follows (see page 156):—

The work done during the 12 months ending December 31st, 1902, has been taken out for me on the form herewith given (on pages 157–159) which follows closely the sections of the Act which lay special duties on the Workshops Inspectors.

It appeared that it would be advantageous to exhibit the work in this manner, since, though one might not get a complete picture, a report so framed would show what sections of the Act required or were receiving special attention, and what others were not.

The sections of the Act relating to bakehouses have not been included in this return. These have been the subject of a special report to the City Council, and will be briefly dealt with separately.

Showing the work done by the Inspectors under the Factory and Workshop Acts in the year 1902.

Number of District	INSPECTOR	WORKSHOPS						Number of visits to houses where out-workers are employed	Factories and Workshops not provided with proper means of escape in case of fire	BAKEHOUSES					
		Number of visits	Number in which Sanitary defects were found	Number of reports referred to Factory Inspector (unregistered factories, &c.)	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register			Number of visits	Number in which Sanitary defects were found	Number of reports referred to Factory Inspector	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register
1	Joseph H. Fowles...	3385	389	227	15	276	1254	...	23	557	18	3	7	4	81
2	John Kewley... ...	2755	196	90	13	178	983	4	8	891	57	10	...	16	174
3	Ernest Bailey ...	2465	180	94	7	150	943	1	1	1080	123	1	...	12	143
4	Francis J. Rowe ...	3235	246	102	1	179	1117	1	4	747	12	1	...	6	151
...	Emma Coppock ...	2383	93	1	...	...	...	678	...	...	...	...	...	...	...
...	Ethel Stewart and Margt. L. Brown ...	1473	57	...	2	...	...	747	...	...	...	...	...	...	...
...	TOTALS	15696	1161	514	38	783	4297	1431	36	3275	210	15	7	38	*549

* 160 are cellar bakehouses.

The following, then, is the statement mentioned :—

Action taken under Sections of the Factory and Workshop Act, 1901, during the year 1902	WORKSHOP, &c., INSPECTORS					
	Bailey	Rowe	Kewley	Peacock	Coppock	Brown
Section 2.—(1) Workshops found not cleanly......	60	118	44	47	66	52
Nuisance abated	60	118	44	47	66	52
Prosecutions	1	0	1	0	0	0
Workshops not properly ventilated ...	4	3	4 notices served	12 notices served	6	7
Observations made	5	11	12	1	?	0
Tests of air made	5	11	12	2	0	0
Nuisance abated	8 (?)	4 (?)	4	9	6	0
Prosecutions	0	2	2	3	0	0
Overcrowding found	8	3	0	2	2	0
Nuisance abated	8	3	0	2	2	0
Prosecutions	0	0	0	0	0	0
Section 2.—(2) Instances in which a closet was found to communicate freely with the interior of a workshop	2	2	1	1	2	1
Instances in which action was taken......	2	2	1 prosecution	1	0	1
Section 2.—(3) Lime washing, cleansing, or purifying necessary for the health of persons employed in a workshop. Instances in which action was taken	118 workshops, 79 bakehouses	158 and 30 bakehouses	131 notices, 1 prosecution	104 notices served, 1 prosecution	123	49
*Section 7.—Provision and maintenance of ventilation. Maintenance applicable only to young persons and females	4	3 notices served	5 notices served	3 notices served	6 notices served	7 notices served (?)
Section 8.—Wet floors drained, laundries, pickle-works, bottlewashing, etc.	3 laundries drained	1 notice served	1 prosecution	Laundries 2, pickle-works 1, fish-curing 1	...	...

* See page 168.

Action taken under Sections of the Factory and Workshop Act, 1901, during the year 1902.	Workshop, &c., Inspectors					
	Bailey	Rowe	Kewley	Peacock	Coppock	Brown
Section 9.—Sanitary conveniences provided, P.H.A.A.	10 referred	12 referred	17 referred	6 referred	1 referred	1 referred
Section 14.—(1) Certificates that factories and workshops are provided with means of escape in case of fire.	10	2	2	2	...	...
Section 14.—(2) Number of notices served, specifying the provision required of means of escape in case of fire.	2 complied with	3 complied with	9 notices, 8 complied with	21 notices served, 19 complied with	1 (?)	...
Section 16.—(6) Maintenance of means of escape in case of fire.	?	?	?	?	?	...
Section 74.—Instances coming to the knowledge of the inspectors in which special fans have been provided for the immediate removal from operatives of dust, gas, vapour, or other impurity.	...	...	1 case referred to the Factory Inspector	...	...	...
Section 103.—Workshop laundries. Instances in which action has been taken in respect of ventilation or other sanitary requirements.	No special statement	No special statement	...	No special statement	2 cleansed and white-washed, notices served	No special statement
Section 107.—(1) Scheduled occupations in which lists of outworkers have been received and examined in 1902.	...	...	...	...	See Miss Brown's statement.	See annexed table.
Section 108.—Notices given to the Occupier of a Factory or Workshop that any place in which work is carried on for him is injurious or dangerous to the health of the persons employed therein.	...	...	...	...	o	o

Action taken under Sections of the Factory and Workshop Act, 1901, during the year 1902.	Workshop, &c., Inspectors					
	Bailey	Rowe	Kewley	Peacock	Coppock	Brown
Section 109.—Instances in which wearing apparel has been made, cleaned, or repaired in any house in which a case of Scarlet Fever or Smallpox has occurred, and in which the occupier of the factory or workshop has been apprised.	...	...	...	...	0	2
Section 110.—Work given out where any notifiable disease has been discovered, with the action taken thereupon.	...	...	...	...	0	...
Section 111.—Domestic factories and workshops not distinguished.	...	0	0	...	...	...
Section 2.—List of work places to which subsections 1 and 2 may be supposed to apply, with any action as yet taken in reference to them.	38 kitchen restaurants visited.	42 restaurants visited.	...	...	...	...
Section 18.—Power to close an unhealthy or dangerous factory or workshop. Corresponding action taken under the P.H.A., 1875.	Prosecution insanitary workshop, 1	...	...	...	...	...
Remarks	Repair of roofs, 13. General repairs, 2. Prosecutions for defective roofs, 2. Bakehouse visits, 942.	Repair of roofs, 4. Other repairs, 1. Outworkers, lime-washing, 1. Bakehouse visits, 607.	Defective roofs, &c., 19. Prosecutions, 2. Bakehouse visits, 831.	Bakehouse visits, 390.	16 Cleansing notices have been served on occupiers of places where home work is done.	Repairs to roof, 5 cases. General repairs, 10. Outworkers, notice to cleanse 13. Prosecutions, 3 for defective roofs.

Attention is called to the following table, which shows the kind of work pursued by the outworkers, lists of which are sent to the Sanitary Authority in accordance with section :—

TABLE No. 18.—SHOWING THE NUMBER AND CLASSIFICATION OF PERSONS EMPLOYED AS OUTWORKERS BY FIRMS WITHIN THE CITY, AND THE NUMBER OF SUCH FIRMS IN FEBRUARY, 1903.

Trades	No. of Employers	No. of Outworkers or Contractors employed
Tailors	176	1112
Shirt-makers	42	1014
Dress, Mantle, Costume, &c., Makers	67	691
Underclothing and Pinafores	34	555
Handkerchief Hemmers	19	444
Boot, Slipper, &c., Makers	63	252
Umbrella Trimmers	19	248
Quilt, Cushion, &c., Makers	3	30
Stay and Corset Makers	3	18
Cabinet Makers and Upholsterers	11	18
Wool Workers, &c.	9	48
Paper Bag Makers	5	14
Rubber Workers	2	6
Fur Workers	1	1
Lace Makers	1	4
Optician	1	1
Totals	456	4456

The number of these visited, 1431.

BAKEHOUSES.

With regard to underground bakehouses, considerable delay has been interposed by the need of a common understanding amongst Medical Officers of Health as to the requirements to be fulfilled before Sanitary Authorities would give certificates in respect of these bakehouses, and also by the necessity of conferring with the Master Bakers. Further, it has been necessary to secure the sanction of the City Council to the proposed requirements. These difficulties have now been surmounted.

A set of requirements has been sanctioned by the City Council, which has been accepted by the Master Bakers' Association for Manchester and Salford, and which very nearly agrees with those accepted by the Incorporated Society of Medical Officers of Health.

No bakehouses were altered during the year under specification.

The action taken up to this time in respect of underground bakehouses is set forth in the following tables :—

Bakehouses Closed during the Year 1902.

Address

987, Ashton Old Road, Higher Openshaw.
49, Ashton New Road, Beswick.
15, Daniel Street, Bradford.
51, Clayton Street, Ancoats.
86, Great Ancoats Street.
489, Mill Street, Bradford.
520, Oldham Road.
144, Oldham Road, Miles Platting.
14, Poplar Street, Ancoats.

Address

62, Rochdale Road, Harpurhey.
117, Brunswick Street.
3 & 5, Chorley Street, Ardwick.
176, Gorton Lane.
27, Monmouth Street.
205, Oxford Street.
54, Rusholme Road.
66, Medlock Street.
375, Stretford Road,
165, Chester Road.

The following table shows the amount of work done since the commencement of operations in 1894 :—

Year	Bakehouses Altered	Bakehouses Closed
1894	3	3
1895	16	12
1896	28	19
1897	22	31
1898	18	17
1899	12	18
1900	8	13
1901	3	17
1902	0	19
	110	149

Total, 259.

The alterations here mentioned have been in all cases considerable, and are, for the most part, carried out according to careful specifications drawn up in the City Surveyor's Department to comply with the requirements of the Medical Officer of Health. They have not, however, been such as would justify the Corporation in certifying that the bakehouses are in all respects suitable.

It will be noted that, though 19 underground bakehouses were closed in 1902, none were altered.

Altogether, since 1894, 110 have been altered and 149 have been closed.

The new bakehouses erected during the year 1902 are as follows :—

Statement of the number of Bakehouses approved by the Improvement and Buildings Committee, and completed during the year 1902.

Situation	Date of Approval and Owner	Date of Completion
Addition to Bakehouse, Stanley Street, Openshaw	10th July, 1901—Exors. of W. Johnston	14th March, 1902
Shop and Bakehouse, Heywood Street and Markland Street, Cheetham	10th July, 1901—Peter Halley	26th March, 1902
Bakehouse, Windermere Street, and Oxford Street, Bradford	14th August, 1901—James Hayes	6th May, 1902
Bakehouse, No. 69, Rumford Street, C.-on-M.	12th February, 1902—Mrs. Brownhill	28th April, 1802
Bakehouse, Osborne Road, Harpurhey	26th September, 1901—John Mills	7th June, 1902
Bakehouse, No. 91, Ashton Old Road, Openshaw	11th December, 1901—Whittaker & Harrison	24th June, 1902
Bakehouse, Goodier Street, Newton Heath	10th July, 1901—Albert Horrocks	12th July, 1902
Bakehouse, Halliwell Lane, Cheetham	10th October, 1901—Thomas Brummitt	18th July, 1902

It is to be feared that, in spite of the concerted pronouncement of the Society of Medical Officers of Health, there will be great variation in the extent to which the requirements relating to underground bakehouses can or will be insisted upon, and that, when the sections of the Act relating to these come into force in the beginning of 1904, they will serve to render permanent many insanitary bakehouses.

It would occupy too much space to insert in full the report presented to the City Council, and it may suffice to give a brief statement of its purport.

A considerable section is taken up with observations on the condition of the air of bakehouses under different circumstances, which were intended to serve as a guide to the most important conditions in granting the certificate.

They show in general that cubic space has more influence in determining the temperature of an underground bakehouse than height. As regards the proportion of carbonic acid present in the air, this would appear to increase in bakehouses in work below a height of seven feet and below a cubic content of 1,500 feet. But, on the other hand, large underground bakehouses show a comparatively high proportion of carbonic acid.

Detailed observation also shows that the arrangements for ventilation actually in work have a marked influence on the proportion of carbonic acid present.

But the state of the atmosphere as regards temperature and carbonic acid is only a very partial index of sanitary condition. Damp walls and the ready entrance of dirt by doors and windows are at least equally important. Further, it is requisite to have a cleanly bakehouse. It must, therefore, be suitably and adequately lighted The surfaces must be such as to admit of easy cleaning. The furniture must be placed on strong ball-bearing castors so that it can be readily removed. The approaches must be such as to avoid the introduction of dirt. Proper cloak-room provision must be made. The bakehouse must be completely separated from adjoining cellarage. Abundance of comparatively pure air is needful for health. The bakehouse must, therefore, be adequately ventilated.

To meet these conditions, the requirements which the Manchester City Council has resolved to insist upon are as follows :—

UNDERGROUND BAKEHOUSES.

Factory and Workshop Act, 1901, Sec. 101.

In the opinion of the Incorporated Society of Medical Officers of Health it is desirable that the following suggestions, which have been drawn up for the guidance of Medical Officers of Health in advising their Sanitary Authorities as to requirements that may be needed under Section 101 of the Factory and Workshop Act, 1901, should be adhered to, so as to secure uniformity of action throughout the country :—

SUGGESTED REQUIREMENTS FOR UNDERGROUND BAKEHOUSES AS ALTERED AND ACCEPTED BY THE CITY COUNCIL. *

A.—CONSTRUCTION.

1. An underground bakehouse shall not be less than 7ft. 6in. in height throughout, measured from the floor vertically to the ceiling; but that in exceptional circumstances a minimum height of 7ft. 4in. be allowed.

2. No underground bakehouse shall have a cubic capacity, clear of the oven, of less than 1,500ft.

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* These requirements have been adopted by the City Council with the exception of A (1), in which the original figure was 8 feet.

3. The floor shall be constructed of hard, smooth, durable, and impervious material.

4. The walls shall be constructed of a material which is hard, smooth, durable, and impermeable to damp.

> [*Note.*—Where adjacent ground abuts on a wall, or walls, such walls should be lined with the best glazed bricks, uniformly joined with Portland cement, to form internal walls, separated from the existing walls by a cavity, and bonded to them, the intervening space being ventilated to the outer air.

5. The ceiling shall be even, impermeable to damp and dust, and durable.

6. Every underground bakehouse shall be approached by a suitable staircase, adequately lighted and ventilated.

No outside staircase shall terminate within an underground bakehouse.

Any opening into the shop above must be so covered as to prevent the entrance of dust.

B.—LIGHT.

7. The underground bakehouse shall be absolutely lighted with daylight throughout, to the satisfaction of the Sanitary Authority, and the lighting maintained shall be such that an Official Copy of the Abstract of the Factory Act may ordinarily be read in all parts of such bakehouse between the hours of 11 a.m. and 3 p.m.

C.—VENTILATION.

8. Ventilation shall be so arranged that the circulation of air is confined to the underground bakehouse.

9. Ventilation shall be adequate—that is to say, fresh clean air shall be supplied constantly during working hours so as to provide not less than 3,000 cubic feet of air per hour for each person employed, with any additional amount required for purposes of combustion, in such a manner as to avoid the occurrence of draught, and so that the air is sufficiently renewed in all parts of the underground bakehouse; and by the aid of mechanical power, where, in the opinion of the Medical Officer of Health, such is necessary.

Provision shall be made for the removal of steam from the underground bakehouse.

Where mechanical power is used, the fresh air shall be taken from a height above the level of the adjoining ground of not less than 6ft., and be distributed to different parts of the underground bakehouse in such a manner as to change the air of such bakehouse in all parts.

> [*Note.*—This will generally require the provision of a fan. Foul air may also be extracted by means of a fan with any aid available from gas and ventilating shafts.]

10. Arrangements for ventilation shall be such that the temperature of the underground bakehouse from October 1st to May 31st shall not exceed 80° Fahr., except within half-an-hour after a batch of bread has been drawn.

D.—ALL OTHER RESPECTS.

11. Proper provision shall be made for the storage of flour elsewhere than in the underground bakehouse itself.

12. There shall be no opening into the underground bakehouse for any purpose which will tend unduly to the admission of dust from the adjoining street.

13. Conveniences for personal ablution shall be provided in a suitable position, and shall include a water tap, and a sink or lavatory basin of an approved character.

> [*Note.*—These conveniences should be outside the underground bakehouse.]

Free access shall be provided to suitable sanitary conveniences suitably situated.

14. All troughs, tables, or other furniture standing on the floor of the underground bakehouse shall be provided with strong ball-bearing castors.

15. Proper provision shall be made for the depositing of wearing apparel outside the underground bakehouse.

16. An underground bakehouse shall not be in communication with a wash-house, nor with any room, cellar, or area containing objectionable materials.

17. An underground room, not entirely separated from the underground bakehouse, shall be well lighted throughout, shall be sufficiently protected against the entrance of ground air, shall be properly ventilated, and shall be at all times clean.

18. All statutory obligations shall be fulfilled.

19. Before making any alterations with a view to meeting these requirements, the owners or occupiers of underground bakehouses shall submit to the Sanitary Authority a specification (and plans) of the alterations which they purpose making.

With these are incorporated other statutory requirements applicable to bakehouses, as follows:—

APPENDIX.

GENERAL STATUTORY REQUIREMENTS.

A.—ALL BAKEHOUSES.

(1) Every room or place used as a bakehouse shall be in such a state as to be, on sanitary grounds, fit for use or occupation as a bakehouse.

(2) No water-closet, earth-closet, privy, or ashpit shall be within, or communicate directly with, the bakehouse.

(3) Every cistern for supplying water to the bakehouse shall be separate and distinct from any cistern for supplying water to a water-closet.

(4) No drain or pipe for carrying off fæcal or sewage matter shall have an opening within the bakehouse.

(5) All the inside walls of the rooms of a bakehouse, and all the ceilings or tops of those rooms (whether those walls, ceilings or tops are plastered or not), and all the passages and staircases of a bakehouse, shall be either painted with oil or varnished, or be limewashed, or be partly painted or varnished and partly limewashed; and

(*a*) Where the bakehouse is painted with oil or varnished, there must be three coats of paint or varnish, and the paint or varnish must be renewed once at least in every seven years, and must be washed with hot water and soap once at least in six months; and

(*b*) Where the bakehouse is limewashed, the limewashing must be renewed once at least in every six months.

(6) No place on the same level with a bakehouse, and forming part of the same building, shall be used as a sleeping place, unless it is constructed as follows, that is to say:—

(*a*) is effectually separated from the bakehouse by a partition extending from the floor to the ceiling; and (*b*) has an external glazed window of at least nine superficial feet in area, of which, at the least, four and a half superficial feet are made to open for ventilation;

and unless such sleeping room (if separately occupied) comply with the requirements as to cellar dwellings or underground rooms (so occupied) laid down in the Public Health Acts.

B.—UNDERGROUND BAKEHOUSES.

(1) An underground bakehouse shall not be used as a bakehouse unless it was so used at the passing of the Factory and Workshop Act, 1901 (*i.e.*, August 17th, 1901).

(2) After January 1st, 1904, an underground bakehouse shall not be used unless certified by the District Council to be suitable for that purpose; and an underground bakehouse shall not be certified as suitable unless the District Council is satisfied that it is suitable as regards construction, light, ventilation, and in all other respects.

In addition, the City Surveyor prepared a form of specification suitable for the fulfilment of these requirements, which is embodied in the report, and will be found both by the Corporation and by bakers very useful. Where we can see our way to furnish a specification which will enable a bakehouse to be altered so as to receive a certificate from the Corporation, this will be prepared in the City Surveyor's Department, and sent to the tenant of the bakehouse. Where, however, the bakehouse appears quite unsuitable, or it is considered that no specification will adequately meet the difficulties, the owner and tenant of the bakehouse will be invited to submit a specification. In either case the form of specification provided will be useful.

It now remains to visit as rapidly as possible the various underground bakehouses, and determine the course to be taken in each case.

It may be added that the Shop Hours, &c., Sub-Committee, under the Chairmanship of Councillor Marsden, have now visited all the remaining underground bakehouses, except those to which the Medical Officer of Health considers that the City Surveyor may grant a specification.

These they have divided into three classes :—

(1) A few added to those to which the City Surveyor may prepare a specification.

(2) Those to which the Corporation do not see their way to grant a certificate, but invite the tenant and landlord to send a specification, if they consider that they can render the bakehouse suitable.

(3) Those in which no certificate should, in their opinion, be granted.

The majority fall under heading 2.

A number of plans and specifications have been sent out in respect of bakehouses, and in other cases specifications and plans have been accepted with amplifications.

The first recent alteration made, however, in an underground workshop was not in relation to a bakehouse, but to a millinery establishment. The inspector (Mr. Rowe) having reported that this workshop was in an unfit condition, I visited the workshop, agreed with his report, and planned out a scheme of alterations, which included bringing in fresh air from above by means of an electric fan ; warming it in cold weather in contact with a radiator, heated by means of pipes circulating from the boiler attached to a fire used to warm the workshop. This rough sketch has been skilfully carried out by the engineer employed by the proprietors. The walls have been protected from damp, an unsuitable partition removed, the sanitary conveniences re-arranged, and, altogether, the place has been transmuted as a workshop.

A bakehouse is not quite so easy to alter in most instances, but the general idea is the same, except that provision for warming the incoming air is not likely to be often made.

HOUSING OF THE WORKING CLASSES.

The following statement shows the number of new houses certified as fit for human habitation in successive years in the various divisions of the City between 1890 and 1902. It will be seen that the erection of new dwellings was at a maximum in 1896-97, from which year it gradually declined up to 1901, when there was a decided drop. Last year there was a very slight increase on 1901. The various districts, naturally, show no general concordance in the number of new dwellings erected.

A.—STATEMENT AS TO THE NUMBER OF DWELLING-HOUSES CERTIFIED AS FIT FOR HUMAN HABITATION IN THE VARIOUS DIVISIONS OF THE CITY BETWEEN 1890 AND 1902.

DISTRICT	1st Nov., 1890, to 31st Oct., 1891	1891 to 1892	1892 to 1893	1893 to 1894	1894 to 1895	1895 to 1896	1896 to 1897	1897 to 1898	1898 to 1899	1899 to 1900	1900 to 1901	1901 to 1902	TOTALS
Ancoats ...	31	195	54	70	7	97	113	53	25	28	33	1	707
Central ... St. George's	NOTE:—193 Artisans Dwellings	...	...	...	...	...	...	...	...	...	...	5	198
Cheetham	8	38	76	97	37	155	269	370	315	128	253	171	1,917
Crumpsall	17	7	18	24	44	39	37	41	18	102	53	56	456
Blackley ...	29	11	13	5	19	41	31	56	67	58	33	42	405
Harpurhey	55	60	60	170	191	342	253	346	327	169	129	70	2,172
Moston ...	22	12	74	89	148	193	225	263	248	282	179	78	1,813
Newton ...	40	20	10	30	65	140	96	136	134	110	90	211	1,082
Bradford ...	36	39	49	21	65	67	198	91	103	198	47	239	1,153
Beswick ...	2	8	15	8	...	97	118	128	98	119	175	94	862
Clayton ...	6	61	6	9	39	111	152	161	229	234	164	104	1,276
Ardwick ...	4	34	25	59	177	261	192	295	361	145	110	109	1,772
Openshaw	177	169	65	15	60	69	71	152	119	182	80	190	1,349
Gorton ...	178	110	30	2	2	20	87	236	178	57	...	—	900
Rusholme	51	37	76	89	211	277	294	354	486	462	288	346	2,971
C.-on-M. ...	26	97	97	88	18	36	46	57	1	32	48	27	573
Hulme......	...	2	1	1	...	29	24	4	3	2	4	1	71
City Totals	682	1,093	669	777	1,083	1,974	2,206	2,743	2,712	2,308	1,686	1,744	19,677

The number of new dwellings erected probably reflects to some extent the prosperity of the City, taking into consideration, however, the tendency for building operations alternately to lag behind and to go ahead of the demand for houses, and taking into account also the increasing tendency for new dwellings to be erected in the outskirts. It will be seen, however, from the subjoined table that the number of new dwellings occupied in adjoining districts shows a decided diminution in 1902 in comparison with recent previous years.

B.—NEW HOUSES CERTIFIED IN OUTSIDE DISTRICTS IN 1902.

DISTRICTS	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902
Salford	...	254	564	454	613	883	872	1268	885	674	818	733
Eccles	141	164	109	100	118	113	165	219	202	215	215	185
Stretford	30	43	38	274	356	313	355	340	262	265	320	329
Urmston	73	45	42	34	80	102	135	88	43	18	21	24
Withington Urban District Council:												
Withington, including Whalley Range	23	31	17	50	70	79	162	171	225	169	59	52
Didsbury	31	42	33	26	79	55	45	66	139	66	37	34
Burnage...	...	...	26	21	...	1	24	13	1	14	14	59
Chorlton-cum-Hardy	81	63	10	37	94	155	182	152	55	191	220	182
Moss Side	...	...	...	...	...	...	...	119	35	403	400	314
Levenshulme	...	...	...	...	...	...	...	224	290	420	180	236
Droylsden	...	...	...	...	...	...	...	126	36	41	43	...
Gorton	...	...	...	...	...	...	...	397	411	352	353	187
Totals	379	632	839	996	1410	1701	1940	3183	2584	2828	2680	2335

It would appear, moreover, that in some parts of the City, notably in Ancoats, there are now more empty houses than in recent years. Attention may be called in this connection to the increased number of new houses erected in 1902 in Newton Heath and Bradford.

The number of new houses erected year by year is of much interest as showing the pressure of population generally, but it cannot be said much to affect the work of the Sanitary Committee. The Unhealthy Dwellings Sub-Committee, which was appointed in 1885, and has since pursued its work under the chairmanship of Alderman Walton Smith, had two tasks to perform —to deal with a large number of insanitary dwellings scattered over the City, and to deal with specially insanitary areas.

The first of these tasks has been pursued with a steady ardour, in spite of various set-backs, and the results of the operations are recorded in the following table. There being at the beginning of the work of this Sub-Committee about 8,000 back-to-back houses in the City with conditions peculiarly unfavourable to health, the operations of the Sub-Committee have been in the main confined to this class of dwelling.

Partly those houses condemned by the Sub-Committee have been pulled down, partly they have been converted into through houses with yards and water-closets, partly they remain closed. The houses have been condemned under a local Act, which does not give power to the Corporation to have the houses demolished. In some instances the condemned dwellings have been converted into workshops.

There is no doubt whatever that these operations have been highly beneficial, and they have had this advantage, that, with rare exceptions, there has been no material disadvantage as regards difficulty in rehousing dispossessed tenants.

In all, 5,103 houses have been closed; demolished, or added to other houses, the total number of back-to-back houses remaining being about 3,000. Of the 5,103, 1,068 have been closed and have not been reopened as dwellings; 2,874 have been closed and subsequently demolished, and 1,161 have been closed and added together to make through houses, being thereby discontinued as separate habitations. The distribution of these operations in the City, and the number of houses closed year by year, is shown in the following tables :—

RETURN SHOWING THE NUMBER OF HOUSES CLOSED, DEMOLISHED, OR ADDED TO OTHER HOUSES, THEREBY BEING DISCONTINUED AS SEPARATE HABITATIONS WITHIN THE CITY, FROM FEBRUARY, 1885, TO 1901, ALSO FOR 1902 (JANUARY TO DECEMBER IN EACH YEAR).

SANITARY DISTRICT	Number of Houses Closed, Demolished, or added to other		Number of Houses Closed, which have not up to the present time been allowed to be re-opened		Number of Houses Closed, which have been subsequently demolished		Number of Houses Closed, and subsequently added to other Houses, thereby being discontinued as separate habitations	
	February, 1885 to 1901	1902	February, 1885 to 1901	1902	February, 1885 to 1901	1902	February, 1885 to 1901	1902
1	249	...	91	...	118	...	40	...
2	518	...	90	...	351	...	77	...
3	510	20	136	20	213	...	161	...
4	21	...	11	...	10	...	...	...
5	3	...	1	...	1	...	1	...
6	535	42	128	42	261	..	146	...
7	172	6	56	6	100	...	16	...
8	21	...	7	...	2	...	12	...
9	557	11	78	8	353	3	126	...
10	407	13	24	3	288	7	95	3
11	309	...	29	...	204	...	76	...
12	140	8	46	8	45	...	49	...
13	20	...	6	...	4	...	10	...
14	301	17	76	14	162	3	63	...
15	261	...	35	...	174	...	52	...
16	16	...	2	...	10	...	4	...
17	183	7	21	6	122	...	40	1
18	466	19	73	10	296	9	97	...
19	...	...	...	...	...	...	...	...
Blackley...... 20	6	...	6	...	...	...	...	...
Harpurhey... 20	6	...	...	...	5	...	1	...
21	...	...	...	...	...	...	...	...
22	125	...	9	...	70	...	46	...
23	19	...	6	...	3	...	10	...
Beswick...... 24	...	...	...	...	...	...	...	...
Bradford..... 24	47	...	5	...	26	...	16	...
25	...	...	...	...	...	...	...	...
26	17	5	4	5	8	...	5	...
Ardwick...... 27	...	...	...	...	...	...	...	...
West Gorton 27	11	...	...	...	8	..	3	...
28	26	9	4	2	18	...	4	7
Totals	4946	157	944	124	2852	22	1150	11

Return showing the Number of Houses Closed, Demolished, or added to other Houses, thereby being discontinued as Separate Habitations within the City in each Year from February, 1885, to December 31st, 1902 (January to December in each Year).

	1885 (From February)	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	Totals.
Number of Houses Closed, Demolished, or added to other houses	54	93	117	191	282	164	262	458	408	708	595	428	262	220	501	156	47	157	5103
Number of Houses Closed, which have not up to the present time been allowed to be re-opened...	...	5	13	18	57	21	37	70	133	88	66	65	67	25	212	44	23	124	1068
Number of Houses Closed, which have been subsequently demolished	46	58	53	111	152	65	116	268	172	497	410	279	160	144	220	80	21	22	2874
Number of Houses Closed, and subsequently added to other houses, thereby being discontinued as separate habitations...	8	30	51	62	73	78	109	120	103	123	119	84	35	51	69	32	3	11	1161

It has been stated that the number of new houses erected does not much influence the work of the Sanitary Committee. If, however, the City is specially prosperous, there is an increased demand for house room, and these operations have from time to time been much impeded in consequence. Clearly, these operations are facilitated when there are a considerable number of empty houses. It does not follow, however, that empty houses denote the cessation or even the diminution of overcrowding, and the question of overcrowding must be considered, to some extent, separately from that of providing sanitary dwellings.

The policy of gradually closing back-to-back houses has been called in question. There is, presumably, no dispute that the arrangements connected with these houses are bad. But it has been stated that overcrowding is intensified by the disuse or addition of these houses to make through houses.

The facts of the census do not support this view. Taking the criterion of overcrowding adopted by the Registrar-General of their being over two persons per room, two-roomed tenements are considerably more overcrowded than those containing a larger number of persons. And this is quite easy to understand. Many families have a great reluctance to give up their dwelling, even when the family has quite outgrown its accommodation. Merely the opportunity of expansion has in itself a tendency to diminish overcrowding.

Further, improvements effected in the centre of the City cause the removal of a considerable number of dwellings, so that if the closing of houses produced a tendency to overcrowding, this tendency would in any case have to be encountered.

This being granted, it is still considered that certain tendencies exist in particular parts of the City which are increased by the closure of dwellings, however poor in character, and it is therefore claimed that, before dwellings to any large extent are closed, accommodation should be provided for those displaced.

In one district of the City it is said the practice has comparatively recently grown up of taking larger houses, sub-dividing them, and letting off the separated rooms to separate tenants, or, rather, to separate sub-tenants. It is very doubtful whether this practice is to be ascribed chiefly to the closure of dwellings, since it has not manifested itself most acutely in those districts in which the largest number of dwellings have been closed or altered.

Another fact which has to be considered is that, in proportion as the business part of the City extends, there is a greater pressure for housing accommodation near the centre to provide for the increasing numbers engaged in casual work.

It has hitherto been held by the Chairman of the Sanitary Committee that the gradual closing of back-to-back dwellings has resulted in the tenants finding fresh houses, and gradually pushing the population outwards, and such has been, I believe, in the main, the consequence of these operations, the houses added and conserved being made very much more sanitary.

In certain areas of considerable extent, moreover, the conditions of housing were so bad that the Sanitary Committee condemned them under the Housing of the Working Classes Acts, and erected new dwellings, including tenements, cottages, and a model lodging-house. These operations began in 1889, and were completed in 1900. Eight areas were cleared with an aggregate population of 3,127, or thereabouts, and provision has been made on five of the sites for 2,729 persons, including 363 at Walton House. The remaining three areas have been converted into open spaces.

It is manifest that the disturbance of the population under such schemes is liable to be immensely greater than under the continuous piecemeal closure of back to-back dwellings mentioned above.

To meet the growing pressure of population more than one plan has been put forward. It has been held that the best method to relieve congestion is to obtain land on reasonable terms on the outskirts, and to erect working-class dwellings in accordance with Sanitary principles, but as cheaply as possible. With this object in view the Blackley Estate was acquired, and a commencement is now being made in its development.

As regards transit, this estate is very favourably situated, a condition which, under existing circumstances, is of primary consequence. How far it may be possible to run cheap cars to the outskirts remains to be seen. But that, if it were possible to do so, the relief thus afforded would help greatly to solve the question of overcrowding in the centre of the City, and to improve the health of the workers, there can be no doubt.

With regard to the Blackley Estate, which contains 187 acres adapted for the construction of dwellings, much anxious consideration has been given during the past year to the subject of the houses to be erected. On April 3rd, 1901, the City Council directed the Sanitary Committee to formulate schemes for the erection of 203 dwelling-houses here, 150 of which were required to meet obligations of the Corporation incurred by improvements. A Special Sub-Housing Committee was appointed to deal with the development of the Estate, Alderman Walton Smith being the Chairman and Mr. Councillor Fildes the Deputy-Chairman.

In erecting the first houses it had to be considered that they would be placed on the principal road passing through the Estate, viz., Victoria Avenue, and that they ought, therefore, to be of a better class than those situated in side streets. On the other hand, it was necessary to consider the class of persons for whom the provision was intended, the amount of rent which would probably be paid, and the demand for houses likely to exist or to arise in that situation.

Much trouble was expended by members of the Committee in visiting places in which different types of houses existed, and in considering the kind of dwellings to be erected. The Citizens' Housing Committee also took a considerable interest in the inception of the scheme, which was a resultant of these and other factors. A special report was presented by the Sanitary Committee to the Council on this subject.

In framing the scheme ultimately submitted to the Council in (February-March) 1903, the Sanitary Committee had the benefit of two consultations with the officials of the Local Government Board. The report submitted by the Sanitary Committee to the Council shows, *inter alia*, that four different types of dwellings are to be erected. These will furnish useful data in determining the class of dwellings most in favour with the better-to-do class of artisan, as well as in regard to other matters affecting rehousing.

An important difficulty has arisen in this scheme in connection with the provision of shops and public buildings. The Housing of the Working Classes Act, 1890, makes no provision for these, and, though this deficiency would be little felt in the heart of a large city, it would seriously cripple what is practically a new colony. The Corporation are, therefore, applying to Parliament for powers to be relieved from this disability.

The relief of congestion in the centre of the City depends probably more on the cheapening of transit than on any other one factor.

Supposing, however, that this relief were amply afforded, there will still, it is said, be a large population dependent on casual and cheap labour who will press towards the centre of the City, and the question arises, how are better conditions of housing to be obtained for this class ?

One solution is that which has been adopted by the Corporation of Liverpool, namely, to frame a large scheme for the removal of dwellings from insanitary areas, the essential feature of which shall be that the first disturbance serves for all, the scheme providing for the successive treatment of areas in such a manner that the last area condemned is covered with new dwellings ready for habitation before the houses on the next area are closed. Another feature of the Liverpool scheme is that every possible expense is avoided consistently with good workmanship and sanitary conditions.

This is to be regarded, however, rather as a solution of the question of sanitary reconstruction, without too much disturbance, than as a solution of the question of overcrowding, except in so far as the Corporation retain and exercise control over the rehoused areas. The Housing Sub-Committee paid a special visit to Liverpool to see the manner in which the scheme alluded to has been carried out, and were much impressed by what they saw there. A special report was presented to the Council on the subject of this visit by the Sanitary Committee.

How, now, are the conditions of overcrowding growing up in some central districts to be met?

Is there provision within the Statutes for dealing with them, and does the existing state of the population require or justify the enforcement of such provision?

The Corporation possess regulations relative to houses let in lodgings, or occupied by members of more than one family, and, unquestionably, much of the overcrowding complained of is in such houses.

Further, the Public Health Act, 1879, provides for dealing with overcrowding as a nuisance, and though no statutory definition of overcrowding is given, it would not be difficult to establish the existence of overcrowding dangerous to health in any case in which proceedings could be contemplated.

In answering the question whether these powers should be resolutely enforced, one must consider the extent of the evil.

If it is comparatively recent in its present extent and increasing, it is necessary to remember that a practice such as that of subdividing houses into rooms occupied by separate families, if unchecked in its earlier stages, may easily and quickly grow into uncontrollable dimensions.

It would appear, therefore, that the regulations respecting houses let in lodgings, or occupied by members of more than one family, should be enforced.

As regards overcrowding of houses by the members of one family, discrimination is requisite.

The Unhealthy Dwellings Sub-Committee have given much time and thought to the questions here touched upon during the past year, and it may be anticipated that their labours will continue to be successful in reducing the deficiencies of housing in the more crowded parts of the City in an increasing degree.

The Oldham Road Block No. 2 of Tenements and the Pollard Street Tenements have now been in occupation for a sufficient length of time to make it worth while to consider what change could have been effected in the health of the persons occupying them.

A comparison with the previous conditions of health in the district is subject to certain drawbacks which must be allowed for.

In the first place, the only death-rates in our possession were prepared by Dr. Tatham on the basis of the Census figures of 1891 and the deaths for three years. Three years is, however, too short a period, especially when dealing with such small districts as those covered by the dwellings in question, as Dr. Tatham would be the first to point out. In the second place we want to be sure that the figures relate to the same class of occupants. Are the tenements occupied by families in the same sense that the houses which they replace were. It is believed that this is the case, and that the age constitution of the population has not been essentially altered.

A third question is whether the tenants are of a different class from the persons displaced. There is a tendency, especially in dwellings under Corporation supervision, to get a better class of tenant, and one would think that the restrictions imposed and the regular collection of the rent would have this effect to some extent. Even if the same tenants at first occupy the new dwellings, the stricter administration maintained would soon cause a change in the class of tenant.

It is not believed, however, that this factor has operated to such an extent as entirely to obscure the effects of better ventilation, cleanliness, and good sanitary conveniences.

Understanding, then, that a deduction must be applied to any inferences drawn by virtue of the above considerations, the following are the figures since 1895 for the first tenement dwellings erected by the Corporation.

It will be seen, by comparing the death-rates for 1898-1900 with those for 1895-1898, that three years is not a sufficient length of time on which to base a conclusion for so small a population.

Another point deserving careful note is the proportion of institution to total deaths. This in the Pollard Street Dwellings is somewhat higher, and in the Oldham Street Dwellings is lower than for the whole of the Ancoats district.

It must be assumed, therefore, that the persons occupying these dwellings are of a higher class somewhat than those displaced.

The death-rate for the years 1888 to 1890 on the area corresponding to Oldham Road Block No. 2 was 57 per 1,000, while for the same years on the area corresponding to the Pollard Street Dwellings it was 51 per 1,000.

OLDHAM ROAD DWELLINGS (BLOCK NO. 2)				POLLARD STREET DWELLINGS		
Year	Total Death-rate	Home Death-rate	Institution Death-rate	Total Death-rate	Home Death-rate	Institution Death-rate
1895	26·32	21·05	5·26	21·84	19·42	2·43
1896	26·52	20·20	6·31	36·41	24·27	12·14
1897	27·99	22·90	5·09	31·63	21·90	9·73
1898	32·22	23·20	9·02	35·09	25·06	10·03
1899	34·17	32·85	1·31	21·86	19·13	2·73
1900	34·39	23·81	10·58	42·13	33.71	8·43
1901	22·82	18·79	4·03	39·55	36·72	2·82
1902	25·97	18·62	7·16	38·92	23·95	14·97
Average	28·78	22·68	6·10	33·43	25·52	7·91

It will be seen that the improvement in the death-rates of the district is so great as quite to go beyond anything which could be ascribed to variation in the death-rates from year to year, or even, one would be inclined to believe, to improvement in the class of the inhabitants.

The problem of housing the growing population of Manchester admits, then, of several partial solutions.

These may be formulated as (1) The natural outgrowth of the City under the conditions imposed by the building bye-laws. In this we include such schemes as the development of the Blackley Estate.

(2) Intimately connected with this process is the cheapening of transfer for working men. Already the Corporation of Manchester has made great progress in this direction, so far as facilities for movement by tram from one part of the City to another are concerned.

But the movement outwards is dependent largely on the arrangement of sufficiently cheap fares for working men at convenient hours.

It has been suggested that in this way provision is liable to be made merely for the development of outside districts, and that rateable value is created outside, and at the expense of the City.

It is, however, to be remembered, that by this means it is, or should be, rendered easier to remove houses from inhabited areas near the centre, and that an increased rateable value springs up on those areas in the shape of warehouses and other business premises.

In any case, such a development is inevitable, is for the benefit of the working classes, and is increasingly necessary to counteract the tendency to overcrowding in the centre.

(3) There is manifest an increasing tendency to injurious forms of overcrowding of dwellings in some parts of the City, notably in Red Bank, Strangeways, and St. George's Ward.

It is necessary to deal with this lest it assume dimensions which will render it an almost impossible task. Only by a steady enforcement of the provisions of the Public Health Acts and of the Lodging House Regulations can this tendency be arrested, and, in my opinion, such action is a necessity.

(4) Provision should be made for the removal of existing insanitary areas and for the erection of healthy dwellings in their place. Any reconstruction scheme should, however, be on a large scale, and be worked in successive sections. Careful consideration should be given to the sites on which the dwellings to be erected should be substituted, and, in general, it would be

inadvisable to provide working-class dwellings close to the centre of the City, as the sites could be better utilised and might soon be obstructive, besides being surrounded by lofty buildings.

Any areas rehoused as a result of the action of the City Council should remain under their control, so that any tendency to overcrowding might be watched and counteracted.

The condition of the common lodging-houses is, in many instances, very bad, though in respect of cleanliness of the bedrooms and as regards the regulation of cubic space the police are most vigilant. Some better class common lodging-houses are very much needed, if only as a reason for closing a number of those existing at present.

In conclusion, it should be remembered that the tendency to the subletting of rooms in houses probably depends on factors for the most part not affected by housing schemes, and requires to be carefully watched and dealt with in a resolute manner.

FACTS AS REGARDS OVERCROWDING SO FAR AS RELATES TO THE ALIEN POPULATION.

It became necessary, in connection with evidence required for the Royal Commission on Alien Immigration, to put together the facts at our disposal regarding the health and housing of the poorer part of the Jewish community.

They live, for the most part, on the lower part of the space between the Irk and the Irwell, a district which has steep inclines to both.

Their habits as regards cleanliness cannot be said to be in advance of those of the corresponding class of the population generally. Partly as a consequence of the low wages earned by the new comers, it is a very common practice to take in lodgers, and for this reason in some measure there is a considerable degree of overcrowding amongst them. They are said to be much addicted to gambling, but to be free from intemperance in general.

They are possessed of a high degree of vitality. But it is possible to overstate this factor. Not only are they temperate, but they produce comparatively few prostitutes, a very important factor as regards health. Having these advantages, it is to be expected that, in respect of mortality, they should compare favourably with the poorer class of the native population, but it is remarkable that they should compare favourably with the whole population. How favourably is seen from the following figures for 1900-1902, which relate to the whole population and to certain Jewish districts, for which the Registrar-General was good enough to furnish figures in advance :—

TABLE A.

Deaths and Death-rates in Groups of Ages for the City of Manchester during the years 1900–02.

	All ages	0 to 5 years	5–15	15–25	25–45	45–65	65 +
Population, middle of 1901	546,408	64,374	112,352	112,642	165,418	76,261	15,361
Deaths, All Causes, 1900–1–2	35,699	14,002	1,433	1,506	5,480	8,223	5,055
Death-rates, All Causes	21·78	72·50	4·25	4·46	11·04	35·94	109·69
Deaths from Phthisis, 1900–1–2	3,423	55	136	477	1,673	983	99
Death-rates, Phthisis	2·09	0·28	0·40	1·41	3·37	4·30	2·15

TABLE A.

DEATHS AND DEATH-RATES IN JEWISH DISTRICTS, 1900–1–2.

ALL CAUSES.

	All ages	Under 5	5–15	15–25	25–45	45–65	65 +
Deaths	842	377	33	47	108	169	108
Death-rate	16·99	55·88	3·13	3·92	7·87	30·08	118·03
Population	16,517	2,249	3,515	3,999	4,576	1,873	305

PHTHISIS.

	All ages	Under 5	5–15	15–25	25–45	45–65	65 +
Deaths	65	1	1	17	28	18	0
Death-rate	1·31	0·15	0·09	1·42	2·04	3·20	...

Excluding H.M. Prison 1,028, Boys' Refuge 250, and Workman's Home 100, the rate from All Causes is 17·64, Phthisis 1·21.

From this table it will be seen that at every age group, except in persons above 65, the death rate in the Jewish community is much below that of the population generally.

The same fact is conspicuous in respect of Phthisis, except at ages 15–25, when the rates in the Jewish districts and in the City are equal. This is certainly very remarkable if we consider the manner in which they crowd together. Allowing for the influence of Common Lodging Houses on the native population, it is strikingly suggestive of the influence which the public house has on the propagation of this disease.

Taking, now, the facts collected by Miss Blumenthal (now Mrs. Isidor Zabludow) for the Corporation, we find that in Strangeways out of 623 houses, 59 had 2 persons per room, and 44 had over 2 persons per room.

In Red Bank, out of 367 houses 44 had 2 persons per room, and 60 had over 2 persons per room.

In Angel Meadow, which is largely non-Jewish, out of 174 houses, 23 had two, and 24 had over 2 persons per room; so that fewer houses were overcrowded than in Red Bank, and considerably more than in Strangeways, in proportion to the total number of houses.

As regards lodgers—

Out of 623 houses in Strangeways, lodgers were taken in 303, and part of the house was used as a workroom in 73. We thus see that overcrowding in this district was more serious than the figures previously given would indicate.

Out of 367 houses in Red Bank, lodgers were taken in 94, and one or more rooms were used as workrooms in 65 instances.

Out of 174 houses in Angel Meadow, lodgers were taken in 62, and part of the house was used as a workroom in 6 instances.

The conditions of life, however, are different in these districts, and many of the houses visited in Angel Meadow approximated to Common Lodging Houses.

The taking in of lodgers was the cause in Strangeways of raising the number of persons per room to 2 in 36 instances, to over 2 in 32 instances.

In Red Bank, it was the cause of raising the number of persons per room to 2 in 13 instances, to over 2 in 10 instances.

In other instances, again, it served to increase existing overcrowding.

In order to see what was the relative extent of overcrowding in these districts, I have extracted the following table from the census returns :—

TABLE SHOWING THE DEGREE OF OVERCROWDING FOR THE WHOLE CITY UP TO 4 ROOMS, TAKEN FROM THE CENSUS RETURNS FOR 1901.

Number of rooms in house ...	1	2	3	4
Under 2 persons per room ...	2,140	6.869	4,994	47,569
2 persons per room	870	1,197	576	2,429
Over 2 persons per room ...	450	1,326	651	2,089

We thus see that, taking the poor districts of Red Bank and Strangeways together, there are 104 overcrowded out of a total of 990 on the standard of over two persons per room; while, throughout the City, there are 14,003 houses having 1, 2, and 3 rooms, of which, at the time of the census, 2,427 were overcrowded, a considerably higher proportion.

This illustrates, however, the tendency of small houses to produce overcrowding as much as anything, many of the Jewish houses having 4, 5, 6, and even 7 rooms. Further, the large number of rooms used as workrooms in the Jewish district must be taken into account.

There is, undoubtedly, manifest in the Jewish district a tendency to overcrowding, though, having regard to the class of the population, this cannot be called very excessive. There is also a strong tendency to sub-division of the house, lodgers in these districts meaning often a separate family.

With houses of the size which these poor people occupy it is difficult to see how anything else could result, and all that can be done is to see that sub-division is not carried on to overcrowding.

A feature of Jewish life which deserves special attention is the care bestowed on young children, and the fact that mothers very rarely go out to work. They also suckle their children for full time as far as possible. The result is a remarkably low infant mortality, as shown in the following table, in which the Sanitary District of Cheetham is to be regarded as representing the Jewish community :—

PROPORTIONS OF DEATHS UNDER 1 YEAR PER 1,000 BIRTHS FOR EACH OF FIVE YEARS IN THE STATISTICAL DISTRICTS OF THE CITY.

STATISTICAL DIVISIONS		1897	1898	1899	1900	1901
	City of Manchester	**195**	**196**	**205**	**189**	**198**
I.	Manchester Township	222	218	243	225	236
II.	North Manchester	167	164	172	160	172
III.	South Manchester	193	201	204	186	196
I.	Ancoats	228	208	240	213	234
	Central	259	253	239	244	255
	St. George's	201	211	246	226	231
II.	Cheetham	129	122	104	114	124
	Crumpsall	105	143	168	150	139
	Blackley	146	123	155	167	133
	Harpurhey	185	173	196	164	148
	Moston	149	180	149	118	141
	Newton	193	173	196	167	196
	Bradford	180	212	225	209	200
	Beswick	162	154	169	181	203
	Clayton	269	185	224	182	304
III.	Ardwick	191	205	215	186	188
	Openshaw	189	220	216	190	211
	Gorton (West)	184	217	216	191	190
	Rusholme and Kirkmanshulme	147	179	145	127	148
	Chorlton-upon-Medlock	173	193	215	190	184
	Hulme	223	197	196	199	222

We have seen, however, that the comparatively low death rate amongst the Jews is not confined to infancy, being exhibited at all ages. It is, therefore, not to be wondered at that they are increasing in Manchester, since their birth rate is uniformly high, nor that they are pushing aside the nearest populations.

The principal influences, then, at work in favour of the Jews are their temperance, and the great care taken of the infants.

They exhibit a tendency to overcrowding, which can be dealt with under existing laws, and should be checked.

The practical conclusion to which we are led by the above figures is the need for systematic if discriminating enforcement of the law relating to overcrowding, especially in houses let in lodgings or occupied by the members of more than one family.

THE SLEEPING-OUT QUESTION.

During the latter part of 1902 and the beginning of 1903 a large number of persons slept out on the brickcrofts at Cheetham Hill, and it is alleged also, in the passages adjoining houses. The number of prosecutions on this account averaged 200 per month for three months, and it was calculated that some 500 persons must have been sleeping-out in the beginning of 1903. On January 28th, 1903, the City Council adopted a resolution appointing a Committee to consider this evil and to suggest remedies. This Committee met first on February 9th, and requested the Chief Constable to obtain information from various Cities and Towns on the subject. They also requested their Chairman, Mr. Alderman Mainwaring, to make arrangements for a visit to be paid to the Tramp Ward and other Shelters in the City, as well as to those places where sleeping-out takes place.

The information collected by the Chief Constable from Newcastle-upon-Tyne, Sheffield, Glasgow, Birmingham, Liverpool, Bradford, Edinburgh, Nottingham, Bristol, and Leeds related to three questions.

1. What was the average number of persons charged with sleeping-out per night? In none of these other towns did the number approximate to those recently dealt with in Manchester, though in Leeds it was stated that the number of prosecutions was not commensurate with the evil.

2. Had these Corporations provided Night Shelters, or adopted any means of dealing with this class of vagrants? In no case had the Corporations provided Night Shelters.

3. If the Corporations do not provide shelter, do any charitable or other organisations provide shelter for considerable numbers?

It was ascertained that in none of these other towns did the amount of shelter provided by charity approach that provided in Manchester at the time of the enquiry.

Information was also obtained in regard to London where many shelters are provided by charity, and where also sleeping-out is excessive.

On February 13th the Committee visited the tramp wards, Tame Street, a common lodging house at 10 Russell Street, the Church Army Labour Depot at 3 Ogden Street, Ardwick, the Hood Street Home, Ancoats, and the Wood Street Mission, Deansgate. They were very favourably impressed with the arrangements at the tramp wards as regards sanitation, but not so favourably with regard to the common lodging house, or at least one of the charitable shelters.

They found, however, that the accommodation provided at the tramp wards was not nearly all required, and that the conditions as regards work and seeking work were apparently easier at the charitable shelters. They, therefore, sought and obtained an interview with the Manchester and Chorlton Casual Wards Committee on March 6th.

As a result of this interview, of the information which they had collected and of their deliberations, the Committee formulated certain conclusions which are still sub-judice.

It will be seen that conditions of the gravest character exist in the City, whatever may be the conclusion ultimately arrived at as to the best means to deal with them. It does not appear that this Committee can present conclusions apart entirely from another Committee appointed at the same time to consider the condition of employment of the same class of persons.

These questions, for instance, present themselves. Why are such large numbers of the sleeping-out class to be found in the City? Is it possible to supply a labour test to those who sleep out? What proportion of those who sleep out belong to the City and what to the vagrant class?

WORK OF THE LADIES' PUBLIC HEALTH SOCIETY AND THE LADIES' SOCIETY FOR VISITING THE JEWISH POOR.

The following table shows the amount of work these Societies have done during the year 1902 (see page 188):—

The work performed by these Societies for a number of years in teaching personal and household cleanliness in the poorer districts of the City has had a marked effect in these districts, and an improvement on former conditions can now generally be discerned. The Medical Officer of Health desires here to acknowledge the valuable services rendered by the Lady Officers and District Lady Superintendents of the Societies in guiding and aiding the work of the Female Health Visitors, and for the sympathy which they manifest in their work amongst the poor. A perusal of the table shows a large record of work.

The Health Visitors have made 30,027 inspections of houses in the course of systematic house-to-house visitation in their respective districts. They

Work of Female Health Visitors, Year ending 31st December, 1902.

(a) LADIES' PUBLIC HEALTH SOCIETY.

DISTRICT	Number of Cottages in District	HOUSES VISITED		CONDITION OF HOUSES							No. of Houses containing Lodgers	Complaints requiring action by Sanitary Department	SICKNESS			Leaflets left at Houses	Disinfecting Powder left at Houses	LIMEWASHING								Reports as to Children being Neglected (clothing, food, &c.)	Help Rendered	Death Cards	Average Death-rate
		First Visit	Not First	Dilapidated	Not Dilapidated	Clean	Dirty	Improved since last Visit	Not Improved	Overcrowded			Infectious	Non-Infectious	Total Sickness			Living and Bed Rooms	Kitchens	Yards	Closets	Cellars	Coal-places	Ceilings	Staircases		Help rendered includes :—Giving food, clothing, &c., advising mothers as to care and treatment of children, making of sick beds, cleaning houses for sick persons, obtaining recommends for Convalescents, &c.		
1. Ancoats, West	1434	...	1829	14	1815	1784	45	169	1660	11	209	41	10	478	488	772	764	82	28	44	44	7	1	123	3	1	82	133	42·0
2. Ancoats, North	2137	...	1716	34	1682	1589	127	128	1588	1	283	22	15	279	294	1463	1395	43	44	60	58	13	5	79	16	5	76	157	30·7
3. Ancoats, Central	1021	...	1428	16	1412	1358	70	339	1089	2	34	25	29	288	317	1260	1315	143	90	120	120	14	4	84	15	1	206	72	39·2
4. Ancoats, South	1398	...	1403	23	1380	944	459	385	1018	10	186	69	22	292	314	1607	1439	148	191	277	277	45	135	102	42	57	222	130	32·7
5. Ancoats, East	1166	349	1669	66	1952	1692	326	194	1475	9	281	47	63	262	325	2438	2018	50	34	65	62	1	15	50	24	18	305	91	29·2
6. London Road	1820	...	1969	170	1799	1758	211	785	1184	8	338	85	26	441	467	3386	1741	348	150	289	288	71	35	263	34	26	169	117	34·0
7. Deansgate	1705	...	1537	34	1503	1120	417	289	1248	10	297	82	10	315	325	1571	1215	203	107	106	106	17	48	45	45	6	152	137	35·3
8. St. George's, North	3052	...	1998	8	1990	1921	77	386	1612	2	301	50	38	329	367	1648	1868	55	44	32	32	...	2	19	19	15	189	146	26·8
9. St. George's, East	1421	...	2215	32	2183	2175	40	284	1931	...	119	54	17	183	200	2201	2190	24	135	6	13	3	2	3	...	2	184	177	25·1
10. St. George's, Central	1422	...	1499	208	1291	1326	173	173	1326	16	352	104	15	321	336	2202	1469	269	61	25	30	9	...	255	116	50	173	80	39·2
11. Angel Meadow	1023	...	2088	22	2066	1089	999	438	1650	34	813	105	6	270	276	2123	2094	144	8	28	3	...	...	313	1	...	258	63	50·9
12. Chorlton-upon-Medlock, North	1808	...	1970	3	1967	1883	87	556	1414	...	275	31	14	298	312	2131	1783	118	78	134	135	22	8	144	26	...	371	157	32·9
13. Chorlton-upon-Medlock, South	893	...	1593	5	1588	1291	302	433	1160	4	304	54	2	69	71	1676	1482	88	94	115	114	43	1	233	19	26	187	128	25·4
14. Hulme, West	830	101	910	285	726	914	97	92	818	3	377	41	6	295	301	1146	851	131	65	50	38	31	9	248	49	12	236	63	34·7
15. Hulme, Central	3288	148	1367	12	1503	1344	171	159	1208	3	82	70	3	182	185	1452	1458	172	94	116	33	33	4	149	3	4	202	193	28·8
16. Hulme, East	1134	...	1875	97	1778	1339	536	93	1782	7	547	46	12	496	508	1626	1267	173	36	94	94	30	...	185	20	55	376	85	34·8
TOTAL	25552	598	27066	1029	26635	23527	4137	4903	22163	120	4798	926	288	4798	5086	28702	24349	2191	1259	1561	1447	339	269	2295	432	278	3388	1929	33·9

(b) LADIES' SOCIETY FOR VISITING THE JEWISH POOR.

17. Red Bank	657	...	1322	4	1318	1265	57	159	1163	...	145	122	3	183	186	1174	1174	55	60	15	...	4	...	23	7	...	87	...	17·3
18. Strangeways	394	...	1041	10	1031	868	173	108	933	...	622	132	14	102	116	1064	1041	1	18	30	17	134	...	7	...	...	33	...	18·5
TOTAL	1051	...	2363	14	2349	2133	230	267	2096	...	767	254	17	285	302	2238	2215	56	78	45	17	138	...	30	7	...	120	...	17·9
GRAND TOTAL	26603	598	29429	1043	28984	25660	4367	5170	24259	120	5565	1180	305	5083	5388	30940	26564	2247	1337	1606	1464	477	269	2325	439	278	3508	1929	...

have also made 1,929 special enquiries in cases of death, and have laid 1,300 complaints as to insanitary conditions which they have detected in the course of their daily work.

They have distributed no fewer than 30,940 leaflets on the following matters :—

1. The prevention of diarrhœa.
2. The prevention of consumption.
3. Precautions against measles.
4. Precautions against whooping cough.
5. Suggestions to householders.
6. How infants should be fed, etc.

By the distribution of the leaflets and by personal instruction a system of educational work is constantly going on amongst the poor.

Disinfecting powder has been left at 26,564 houses.

The importance of cleanliness of the houses and person is steadily inculcated.

Limewashing.—The visitors supply brushes, on loan, and give the necessary sanitary dry lime to tenants of houses who will undertake cleansing. During the year they have been enabled to get 10,164 rooms, yards, closets, etc., thoroughly cleansed and limewashed. To this portion of their work the Medical Officer of Health attaches great importance.

In the course of their daily visits they came across 278 cases of neglected children. The parents were warned in many instances, and others were reported to the Society for the Prevention of Cruelty to Children.

Help was rendered to 3,508 families in many ways, such as in food and clothing, advising mothers as to the management of their children, making the beds of sick patients and cleaning their houses, obtaining recommends for Convalescent Homes, and in the summer months arranging to send children into the country for a holiday, and to the Manchester Camps for Poor Children at the Seaside.

During the year they have been engaged in another very important work, viz., supervising the disinfection of houses in cases of consumption, and seeing to their subsequent cleansing, and with some exceptions this work is carried out to my entire satisfaction. At the end of the year they had 333 cases of consumption under observation in their respective districts. It is their duty to report monthly as to whether the house is clean and free from dust and dirt, and every three months they see that a thorough cleansing of the house takes place, so as to keep down infective material as much as possible, viz., the walls are rubbed down with dough, the floors and furniture washed, and the bed clothing and personal clothing of the patient washed in boiling water.

Special Work in the Jewish Quarter of the City.

About the middle of 1899 the Sanitary Committee decided to appoint, in association with the Jewish Ladies' Health Society, a Visitor for special work in the Jewish quarters about the neighbourhood of Red Bank, Strangeways, etc. The Visitor commenced her duties in August of that year, and has since been steadily at work. The streets which she has visited to the end of the June quarter, 1902, are—Fernie Street, Cliff Street, Winter Street, Davison Street, Verdon Street, Back Verdon Street, Scotland, Scotland Court, Park Street, Clarissa Place, Lord Street (Red Bank), Lord Street (Cheetham), all in the vicinity of Red Bank; and also Whitfield Street, Robert Street, Pimblett Street, in Cheetham; with Berkeley Street, Langston Street, Boundary Street, Nightingale Street, Moreton Street, Mary Street, Carter Street, Melbourne Place, Frances Street, Irwell Street, Cheetwood Street, Lockett Street, Drake Street, Kent Street, Willow Street, Lloyd Street, Julia Street, Dewhurst Street, Joynson Street, and Hornby Street, in the neighbourhood of Strangeways.

During the September quarter, 1902, the Health Visitor was engaged on work in Red Bank, and the following Streets, etc., off Red Bank—*i.e.* Dale's Buildings, Ebenezer Place, St. Thomas's Place, Nuttall Court, and Brighton Street.

During the quarter ending January 3rd, 1903, the Health Visitor was working in the district of Angel Meadow, *i.e.*, Crown Court, Crown Lane, Crown Street, Ashley Lane (part of), Beswick's Row, Munday Street, Oswald Street, Comet Street, Comet Court, Berry's Court, Long Millgate, Braham Street, Simpson Street, School Street, New Mount Street, and Nicholas Street.

A thorough house-to-house inspection has been made, and by far the majority were found in a very dirty condition, dilapidated, and in a bad state of repair generally, with the exception of the houses in Lord Street (Cheetham), Whitfield Street (portion of), Robert Street, Pimblett Street, Boundary Street, Moreton Street, Mary Street, and Carter Street (portion of), Frances Street, Locket Street (portion of), Lloyd Street, Hornby Street (portion of), Red Bank (portion of), Crown Lane, Crown Street (portion of), Ashley Lane (portion of), and Oswald Street (portion of).

However, by systematic visitation, and showing the tenants of the houses that the Sanitary Authority is determined to make an impression on these areas, a decided improvement has taken place. The houses are now kept much cleaner, the walls of living-rooms and bedrooms have been repapered; ceilings, yards, cellars, privies, etc., limewashed; defects in roofs, walls, etc., remedied; and the drains, in many instances, reconstructed. With repeated visits being made, the personal and household conditions are maintained, and a great improvement is now visible.

The Unhealthy Dwellings Sub-Committee have also been at work, and the houses in Scotland (portion of), Back Scotland, Park Street, Verdon Street, Back Verdon Street (portion of), and Ebenezer Place are now completed and again occupied, these being converted into through houses, with yards and water-closets provided. In addition, the Committee have condemned the houses 28 to 32, Scotland. This work is now in progress. The Committee have also condemned the houses in Comet Street, Comet Court, Munday Street, Berry's Court, Long Millgate, and Braham Street.

Miss Blumenthal, owing to her marriage, has relinquished this important work. She has been engaged during a period of 3½ years in systematic work in the Jewish quarters of the City, and, undoubtedly, as the result of her devotion to the work, and the tact and energy displayed in dealing with property owners and tenants a great improvement has been manifest, not only in the condition of the property, but also in the habits of the people as regards cleanliness, etc.

Supervision of the Work of the Health Visitors.

At the request of the Medical Officer of Health, and with the consent of the Sanitary Committee and of the Ladies' Public Health Society, Mrs. Crosbie, at considerable personal sacrifice, gave a month of her time to enquiring into the work done for the Health Office by the Health Visitors, and to guiding them in details. This Mrs. Crosbie was enabled to do from having trained herself in the details of sanitary work, and taken the certificate of the Sanitary Inspectors Conjoint Board.

With every disposition to carry out work in connection with the notification of phthisis in the most effective manner, there is a tendency for the Health Visitors to be wanting in precision in giving instructions, and it was to the study and correction of this tendency that Mrs. Crosbie specially directed her attention. For this purpose she accompanied the Health Visitors on their rounds, and gave them a course of special instruction in the technique of infant feeding, so that, when explaining the necessary procedures to young mothers, they might be in a position to tell them precisely what they had to do. She also showed them exactly what enquiries to make in connection with notified cases of phthisis, and how this branch of the work should be conducted.

At the close of this valuable piece of work, which was highly appreciated both by the Corporation and by the Ladies' Public Health Society, she submitted a report, from which the following extracts are given :—

OBSERVATIONS MADE BY MRS. CROSBIE ON WORK CARRIED ON BY THE VISITORS OF THE LADIES' PUBLIC HEALTH SOCIETY, WITH SPECIAL RELATION TO INFANT FEEDING AND TO CONSUMPTIVE HOMES, ALSO ON PRACTICAL INSTRUCTION GIVEN BY HER IN THE TECHNIQUE OF INFANT FEEDING.

Infants.

I beg to report first on the subject of Infant Feeding.

All infants born within the respective districts are visited by the Health Visitors of the Ladies' Public Health Society, who instruct the mothers in the principles of feeding.

The infants have generally reached the age of six weeks before they come under the notice of the Health Visitor.

With rare exceptions the infants of working class mothers are suckled entirely for the first ten to twelve weeks. At this period the mother in many cases finds she is unable to "satisfy" the child, and she supplements the natural by artificial feeding. She has a prejudice against what she calls "mixing milks," nor has she any idea of the food value of milk, and she chooses one of the many advertised starchy "foods." The bottle she prefers is one with a long tube, partly because it is the cheapest (she breaks many), and partly because she can put the child down to suck and get on with her work. The child is generally found to be suffering from indigestion in these cases.

By giving in the first instance simple and cheap food, such as groats, oatmeal, etc., to which milk would be added, to some of these mothers who were willing and anxious to co-operate, I was able to prove to them that by taking suitable and more nourishment themselves, they would increase the natural supply of milk, and at the same cost and infinitely less trouble, nourish two frames with one food. I can report that in each case after a few days the mother was able to dispense with the bottle altogether.

Another set of cases, however, present a very great difficulty, and offer a very poor chance to the infant, viz., those where the mother herself is obliged to go out to work. This she does when the husband is unable to obtain work, and before she takes this step the home has already suffered from poverty, she is weakened herself, and although the child itself up to a certain point is fairly nourished, the final separation from the mother is immediately preceded by an unsatisfied condition, and it is transferred to other care quite likely to be inexperienced and unskilled. In these cases of impoverished homes the milk is bought in very small quantities, and it must remain doubtful as to whether it will always be boiled. Halfpence and pence represent the "ready money" at disposal, and the purchase of a milk saucepan would entail the expenditure of a "lump" sum.

In cases where the family is large and all young, the mother is so overburdened with work that it often happens that the later comers are not kept so clean as they should be, and I often noted a catarrhal condition in these infants.

The hanging up of the whole wet washing to dry in the cottages, especially during the night when the house is shut up, is certainly dangerous to health. The process of drying is a long one in winter.

I beg to suggest that boat-shaped bottles might be bought wholesale, and supplied through the health visitor, at the same cost as the tube bottles they buy for 3½d. The loss to the Committee would be one halfpenny. Not only can they be kept cleaner, but it is absolutely necessary that the meal be taken and done with to maintain the child's health, which the tube bottles does not necessitate, since the child goes on sucking indefinitely.

I beg also to suggest that proper covers for all milk bowls be insisted upon in all milk shops, or places where milk is sold.

I beg to report to you that many samples of milk taken at random were found sweet and good, containing the required amount of cream.

Visits to Consumptives.

In visiting the consumptives I have to report that, almost invariably, there is the greatest readiness to learn, and every desire to carry out instructions. There is also evidence of teaching everywhere. Although it is rare to find a case where no precautions against promiscuous spitting about has been taken, I have visited houses where the floor round the bed and the walls of the bedroom bore traces of sputum. In the worst of these cases I marked the patches of sputum on the walls before they were disinfected by the Staff. Some time after, I revisited the house, scraped the plaster at the marks into a sterilised tube, and I am happy to report that the examination showed a negative result. In cases where the walls have been stripped there is often considerable delay before they are re-papered The plaster is in most cases of a very poor sort and presents cracks and holes in great numbers when once it loses the support of the paper. I would beg to draw your attention to the danger of infective dust obtaining an abiding place in these holes in the plaster. It is not always easy to get the quarterly cleaning carried out, especially when the housewife is herself the victim. In one case, where she was also in advanced delicate health, where assistance from the disinfecting staff was absolutely opposed, I offered to pay a woman to come in and do the cleaning of the walls, and this was readily and gladly accepted. On another occasion the Health Visitor cleaned them down herself, but this I discouraged. When, however, it can be and is done, the people invariably express the greatest satisfaction at the result.

Instructions to Health Visitors in Infant Feeding.

I have to report that the Female Health Visitors attended regularly at the course of teaching on Infant Feeding.

They have now a thorough grounding in the principles of infant feeding, and are able to mix and instruct according to the leaflet supplied to them.

I have asked that at the mothers' meetings, held by the Ladies of the Public Health Society, these visitors may demonstrate every week to the "mothers" according to this teaching, in addition to the visiting of infants in the course of their work.

They are perfectly clear as to the necessity for destroying the sputum of tuberculous patients in the homes, and of their carrying a spit-bottle out of doors or at work, they have been shown how to decide whether a room be dirty, and their own tact and knowledge of the conditions under which the people live, helps them to carry out their mission.

So encouraging has been the result of my very short connection with the Health Visitors, that I am strongly moved to point out to you the great advantage that most certainly must accrue could a capable trained lady be appointed permanently to supervise, stimulate, and instruct. That teaching emanating from the Public Health Office should be of the most enlightened is apparent, and as these workers come constantly in contact with deeply rooted superstition, it is obvious that they themselves must be so instructed as to enable them to deal with it with intelligence.

MONSALL HOSPITAL.

The appended tables shew the general distribution of the diseases admitted to the Hospital during the year 1902, and the results of treatment.

The daily average of patients was 100 less than last year, but during the autumn and winter months the accommodation of the Hospital and the resources of the staff were nevertheless somewhat heavily taxed by an increase in the number of patients, especially those suffering from Scarlet and Enteric Fevers. The highest number reached was 535 in November, and the total number of patients remained above 400 from September to December. It will thus be apparent that the staff of 4 medical men and 98 nurses were kept busily employed. The comparatively easier time in the summer was utilised in giving all the wards a thorough cleaning and disinfection. This has been made easier this year by the fact that the painting in some of the wards has been recently done very thoroughly, under the superintendence of the Town Hall Steward, by the workmen belonging to that department. It is very important that all painting in an infectious Hospital should be well done, and that the materials should be of the best quality; ordinary painting, such as is found in private houses for decorative purposes, will not, as a rule, stand the constant scrubbing and disinfecting which is necessary here, and articles treated that way soon cease to be impervious, and they then become a source of infection. It is important that woodwork should be painted as well as varnished. I believe, also, that it will be found cheapest in the long run.

It is important to recognise in this connection that not only is Scarlet Fever infectious to other people, but some of its complications we know, and others we have reason to think, are due to infection from one patient to another. Now this infective matter is breathed out into the air, but as long as it is thus suspended, provided that the cubic space of air for each patient is sufficient, it probably is so diluted that it does not do much harm. But when these particles sink down and become dust, adhering to the floors and fittings, there is produced a collection of infective matter in a more concentrated form, which can be conveyed to any patient by the hands and clothing of the nurses and attendants in the ward.

Amongst the new work that has been completed this year is the fitting of the Enteric and two Scarlet Fever Pavilions with hot-air apparatus on the radiator system, the existing fires being now employed for ventilation only. This improvement has answered well, and it is intended to proceed with other wards in due course. The old kitchen block has been converted into stores, and the main roads have been paved with setts. A small ward in the enteric block has been converted into an excellent operating theatre, which fulfils all the requirements of aseptic surgery, and is well supplied with heat and light. This, in view of the growing importance of surgical methods in the treatment of infectious disease, has become a necessity, and I have found it most useful.

In the adminstration of the Hospital a few changes have been made. On the resignation of Miss Grant (the House Matron) after 17 years' service, the whole female staff were placed under the control of the Matron, and a Steward (Mr. A. C. Harris) was appointed to superintend the distribution of the stores and control the male subordinate staff, under the direction of the Medical Superintendent.

The salaries of the female domestic staff have been increased, and the employment of non-resident women discontinued, except in the laundry, where the workers, with the exception of the head and second laundress, all reside outside. Similarly, the non-resident labourers in the grounds have been replaced to a further extent by resident hospital porters.

The discipline and health of the staff have been excellent. Seven nurses have contracted Scarlet Fever, two Enteric, and one Diphtheria. In each case the attack has been a mild one. No serious illness has otherwise occurred, and the total amount of time off duty has been small.

Two very necessary changes have been made in the method of removing patients to the Hospital. Each individual is now removed separately, and in the case of Diphtheria and Enteric Fever a nurse accompanies the patient. It is to be wished that this could be done in the case of Scarlet Fever also, but the number of the nursing staff and the accommodation available does not at present permit it.

STATISTICAL REPORT FOR THE YEAR 1902.

Remaining in Hospital January 1st, 1902	467
Patients admitted during 1902	2777
	3244

Discharged.

Cured and Died	2793
Remaining in Hospital December 31st, 1902	451
	3244

Total number of Deaths during 1902	245
Net Mortality	8·8%

Of the deaths, 37 occurred within 48 hours of admission.

Daily Averages.

Patients	388·1
Nurses and Servants	156·2
Officers	6·8
Daily average stay, in days	43·9

TABLE SHOWING MONTHLY DISTRIBUTION OF PRINCIPAL DISEASES ADMITTED THROUGHOUT THE YEAR.

1902	Scarlatina	Diphtheria	Enteric Fever	Erysipelas	Other Diseases	Total	Daily Average Number of Patients in Hospital
January	147	18	10	9	21	205	442·4
February	121	13	16	4	13	167	379·6
March	136	30	9	1	22	198	346·4
April	126	21	25	4	18	194	319·1
May	154	14	9	0	25	202	318·1
June	150	14	17	7	15	203	337·2
July	154	22	15	3	15	209	314·5
August	175	16	18	4	20	233	305·4
September	235	30	18	1	16	300	397·9
October	238	24	41	4	24	331	480·8
November	209	28	30	2	17	286	515·6
December	180	22	29	3	15	249	501·1
Total	2025	252	237	42	221	2777	388·1

CASE MORTALITY FOR 1893-1902.

Year 1893	9·36	Year 1898	10·70
,, 1894	7·82	,, 1899	7·11
,, 1895	9·73	,, 1900	6·22
,, 1896	10·60	,, 1901	7·15
,, 1897	8·60	,, 1902	8·8

Total average Case Mortality for the last ten years—8·6%

YEAR	DISEASE	MORTALITY PER CENT.	YEAR	DISEASE	MORTALITY PER CENT.
1890	Scarlatina	12·2	1890	Enteric fever	16·4
1891	Do.	6·9	1891	Do.	19·1
1892	Do.	9·1	1892	Do.	19·1
1893	Do.	6·9	1893	Do.	18·6
1894	Do.	4·4	1894	Do.	15·9
1895	Do.	7·1	1895	Do.	20·1
1896	Do.	8·5	1896	Do.	19·6
1897	Do.	6·1	1897	Do.	13·3
1898	Do.	6·7	1898	Do.	16·1
1899	Do.	3·6	1899	Do.	12·3
1900	Do.	4·6	1900	Do.	11·8
1901	Do.	4·7	1901	Do.	13·9
1902	Do.	6·1	1902	Do.	10.9

TABLE SHOWING NUMBER OF VARIOUS DISEASES.

DISEASE	Remaining in Hospital, Jan. 1st, 1902	Admitted to Dec. 31st, 1902	Dismissed, Cured, and Died During 1902	Remaining in Hospital, Dec. 31st, 1902
Scarlatina	402	2025	2018	409
Diphtheria	28	252	249	31
Enteric Fever	29	237	218	48
Erysipelas	1	42	42	1
Puerperal Fever	0	11	11	0
Morbilli	0	3	3	0
Other Cases	7	207	208	6
Total...	467	2777	2749	495

SCARLET FEVER.

In Scarlet Fever this year there have been fewer admissions :—2,025 as against 2,573 last year; the average duration of the stay in hospital is practically the same, while the mortality is rather higher, being 6·1 per cent. as against 4·7 per cent in 1901.

The average period of detention in hospital is a long one, but it does not represent the usual stay of an ordinary case of Scarlet Fever. The difficulty lies not in freeing the average patient from infection in a reasonable time, but in restoring severe cases to health and in curing intractable complications. This year there have been many patients who have been sent out well after a protracted illness. The usual period of detention is from 35 to 50 days.

In the treatment of Scarlet Fever it is important to recognise that it is the complications that matter, not the disease itself, in the large majority of cases. A moderately severe attack of uncomplicated Scarlet Fever does not do any harm to the average child; on the contrary, it is often the means of his getting a spell of good feeding and better environment than he would otherwise have, but when complications occur, the bulk of the time in hospital is spent in a condition of malaise, if not of actual illness, and the patient does not benefit from his residence to the same extent.

The bulk of the treatment of Scarlet Fever consists therefore in an attempt to secure aseptic nursing in surgically clean wards, and in this connection I cannot help saying that the manner in which the nursing staff here have worked, not only in the more attractive pursuit of tending those that are actually ill, but in the daily "drudgery" of cleansing the wards and the surroundings of patients, is most praiseworthy. It is important to recognise that not only is Scarlet Fever infectious to other people, but that one case may infect others suffering from the same disease, and, also, infection may be conveyed from one part of a patient's person to another; some complications we know, and others we have reason to think, are due largely to extrinsic infection. Infective matter from every patient (and it by no means follows that the organisms that emanate from every patient with Scarlet Fever are the same in character or virulence) is breathed out into the air, but as long as it is thus suspended, provided that the cubic space of air for each patient is sufficient, it probably is so diluted that it does not do much harm. But when these particles sink down and become dust, adhering to the floors and fittings, there is produced a collection of infective matter in a more concentrated form, which can be conveyed to any patient by the hands or clothing of the nurses and attendants in the wards. From the places where this dust has lodged it must be removed by sweeping with wet cloths, and on the carefulness with which this is done will depend to a certain extent the freedom of the patients from superadded disease in the sense that I have mentioned.

The treatment of severe cases of Scarlet Fever with frequent tepid baths has been continued with encouraging results. They are useful especially in cases where there is much delirium or sleeplessness.

The cleansing of the throats is done with a douche, using a separate sterilised nozzle for each patient; it has been said that the tendency of this method is to set up rhinitis, but this is disproved by the fact that the incidence of this complication has been halved since the douche was introduced. The important point is that it is impossible with a douche to infect a patient during the process of treatment. This is not the case with syringes. It will be noted that there were 40 cases of Endocarditis occurring in the course of Scarlet Fever. In all except two the affection was so mild as to give rise to very slight symptoms, or none at all; in all cases it cleared up before the discharge of the patient. I believe that the occurrence of this complication in a mild form is not sufficiently recognised, and that if it escapes notice, and is therefore untreated, it may lead to a permanently damaged heart, whereas it is really singularly amenable to treatment, chiefly by absolute rest.

I am glad to report that we have had this year an incidence of only 1·4 per cent. of Post Scarlatinal Diphtheria, and of this number only one died. I attribute this low incidence to the care taken by the nurses to avoid the conveying of infection and, also, to the vigilance of the medical officers in making bacteriological examinations of suspected cases. The value of this method is very great; it has frequently happened that Diphtheria Bacilli have been found by examination of a scraping from the throat without the necessity of waiting for a cultivation, and that the patient has been isolated and antitoxin has been given within a few minutes of the detection of the sore throat. When antitoxin can be given as early as this, the results are most striking, as the disease runs, as a rule, a very mild course.

It must not be forgotten also that the fear that the parents have of Post Scarlatinal Diphtheria occasionally prevents or delays the admission of their children to hospital, when they have contracted Scarlet Fever.

SCARLATINA.

AGE OF PATIENTS	MALE			FEMALE			TOTAL		
	Admitted	Died	Mortality percent.	Admitted	Died	Mortality per cent	Admitted	Died	Mortality percent.
Under one year...	7	2	28·5	7	2	28·5	14	4	28·5
1 to 2 years...	27	6	22·2	22	5	22·6	49	11	22·4
2 to 3 ,, ...	70	14	20·0	51	13	25·4	121	27	23·1
3 to 4 ,, ...	85	9	10·5	82	11	13·4	167	20	11·9
4 to 5 ,, ...	110	11	10·0	118	18	15·2	228	29	12·7
5 to 10 ,, ...	415	11	24·0	505	18	3·5	920	29	3·1
10 to 15 ,, ...	172	1	0·5	181	2	1·1	353	3	0·8
15 to 20 ,, ...	47	1	2·1	54	...	...	101	1	0·9
20 to 25 ,, ...	17	...	...	22	1	...	39	1	2·5
25 to 30 ,, ...	12	...	...	9	...	...	21	...	...
Over 30 ,, ...	5	...	...	7	...	...	12	...	...
Total	967	55	5·6	1058	70	6·6	2025	125	6·1

Eleven deaths occurred within 48 hours of admission.

Average stay in Hospital ....year 1901...55·8 days.
Do. do. ....year 1902...57·3 days.
Average stay in Convalescent Ward...year 1902...22·8 days.
Do. Acute Ward......... ..year 1902...34·5 days.

Year	No. of Scarlatinal Fever Discharges	No. of Cases of Post Scarlatinal Diphtheria	Percentage	Died
1901	2669	104	3·8	3
1902	2018	29	1·4	1

PERCENTAGE COMPLICATIONS IN SCARLET FEVER, 1902.

Complication	No.	Percentage
Otorrhœa	373	18·4
Rhinorrhœa	292	14·4
Nephritis	102	5·1
Albuminuria	98	4·8
Endocarditis	40	1·9
Adenitis	81	4·0
Synovitis	29	1·3

DIPHTHERIA.

TABLE 1.—DIPHTHERIA.

Age of Patients	MALE			FEMALE			TOTAL		
	Ad-mitted	Died	Mor-tality percent.	Ad-mitted	Died	Mor-tality per cent.	Ad-mitted	Died	Mor-tality per cent.
Under 1 year ...	3	...	...	1	...	...	4	...	...
1 to 2 years ...	7	1	14·2	10	2	20·0	17	3	17·6
2 ,, 3 ,, ...	11	5	45·5	7	1	14·2	18	6	33·3
3 ,, 4 ,, ...	24	12	50·0	19	7	36·8	43	19	44·1
4 ,, 5 ,, ...	19	10	52·6	17	8	47·0	36	18	50·0
5 ,, 10 ,, ...	40	8	20·0	43	12	27·9	83	20	21·6
10 ,, 15 ,, ...	9	...	...	18	3	16·6	27	3	11·1
15 ,, 20 ,, ...	3	...	...	4	...	...	7	...	...
20 ,, 25 ,, ...	3	...	...	2	...	...	5	...	...
25 ,, 30 ,, ...	1	...	...	2	...	...	3	...	...
Over 30 ,, ...	5	1	20·0	4	...	...	9	1	11·1
Total	125	37	29·6	127	33	25·9	252	70	27·9

Twenty deaths occurred within 48 hours of admission.

TABLE 2.—TRACHEOTOMY CASES.

AGE OF PATIENTS	NO. OF PATIENTS	DIED.	MORTALITY PER CENT.
Under 1 year	1	...	...
1 to 2 years	1	1	100·0
2 ,, 3 ,, ...	6	3	50·0
3 ,, 4 ,, ...	3	2	66·6
4 ,, 5 ,, ...	11	8	72·7
5 ,, 10 ,, ...	5	3	60·0
10 ,, 15 ,, ...	1	1	100·0
15 ,, 20 ,, ...	...	...	..
Total	28	18	64·2

Of these, 10 died within 48 hours of admission.

Average stay in Hospital, in days, year 1901, 31·8
Do. do. ,, 1902, 50·7

TABLE 3.—COMPLICATIONS IN DIPHTHERIA.

Complication	Number of Cases	Percentage
Otitis	16	6·4
All forms of Paralysis	76	30·5
Cardiac Paralysis..................	24	9·6
Ocular Muscles alone	11	4·4
Pharynx alone	4	1·6
Palate alone........................	30	12·4
Diaphragm alone.................	6	2·4
Laryngeal alone	1	0·4
Hæmorrhage	3	1·2
Rhinitis	41	16·4
Adenitis of Convalescence	2	0·8

As will be seen from the above tables, I have to record this year a death-rate of 27·9 per cent., there having been 252 admissions with 70 deaths. This mortality is an exceedingly high one, and it will be necessary to examine the causes which have led to it. On investigation, it is found that—

(1) Of these 70 deaths, no less than 20, or more than a quarter, occurred within 48 hours of reception; they were, in fact hopeless on admission.

(2) In only 12 of the total number of patients admitted with Diphtheria, and in none of those that subsequently died, was antitoxin given before admission.

(3) Patients suffering from Diphtheria are admitted late in the course of the disease.

It will be convenient to take 2 and 3 together.

On the admission of each case, the relatives are asked to state the date of onset of the illness and the time they first sought medical advice, and on tabulating the result of these enquiries, it is found that the average day of disease on which patients with Diphtheria were admitted is between the fifth and sixth, and that medical advice was sought between the third and fourth day. Taking the figures for the deaths only, the patients were admitted between the sixth and the seventh day, and advice was sought between the third and fourth day. I have excluded from these figures all patients who were admitted after the fourteenth day, as these were not in the acute stage on admission.

It will thus be seen that a period of three days has been allowed to elapse before advice was sought at all, and that a further delay of two days has occurred before the patient arrived here. I find on inquiry that there has been no delay in the removal of the patients after notification.

From the experience of fever hospitals generally during the last seven years, it has been repeatedly shown that the beneficial effect of antitoxin is the more marked the earlier it is given, and that after the fifth day it is doubtful whether it is of any benefit in ordinary doses; even very large doses have but little effect compared with that of a small dose administered in the early stage. We should expect, therefore, a mortality such as was common before the introduction of antitoxin. We have it here. I have to add that a circular was re-issued in May to the medical profession in Manchester, urging the administration of antitoxin early in the disease, even when the diagnosis was not certain, and pointing out the fact that the remedy could be obtained free of charge at the Town Hall. I cannot say that the cases have arrived any sooner at the Hospital since, and it is still uncommon for antitoxin to have been given before admission.

It is apparent that the greater part of the delay—and that, too, at the most important time of the disease—is caused by the neglect of the relatives of the patient to obtain medical advice in the first instance. For this, the only remedy is the gradual diffusion of the knowledge of the facts of the case.

A minor point is that the cost of treatment with antitoxin is very high when it has to be given in large doses late in the disease, instead of in smaller doses at the onset; the average dose of serum that is given to cases of Diphtheria on admission here is 12,000 units, and it is occasionally necessary to give up to 20,000 units. The cost of 12,000 units is twelve shillings.

Turning now to the table of cases that have required Tracheotomy, one is again struck with the high mortality, but in explanation of this there are again some points to be noted.

Of the 28 deaths, 10 occurred within 48 hours of admission, and of these three died before the operation could be concluded.

Then again, several of the patients were suffering not from primary laryngeal Diphtheria, but from implication of the larynx some days after the onset of the faucial affection; there is reason to believe that the early administration of antitoxin might have prevented this extension of the disease in some cases.

Thirdly, Tracheotomy was performed in several cases that were hopeless from the amount of general poisoning that was present, in order to render their death a more easy one. In these cases, I consider it advisable to relieve the distress, even when it is slight.

Speaking of Diphtheria generally, it cannot be too strongly pointed out that the disease is a general toxaemia, and not a local affection purely, and that it is not possible by any local treatment to modify the course of the disease. So long as antitoxin is withheld, or given too late to be of any use, we can have but a repetition of the position of ten years ago, when a severe attack of Diphtheria in a child was almost necessarily fatal. For this withholding, I cannot but believe that an undue belief in the efficacy of medicines and of local treatment of the throat is often responsible.

ENTERIC FEVER.

The admissions for Enteric Fever were slightly more in number than last year, 237 as against 208, while the death-rate 10·9 is the lowest yet reached in this Hospital.

In the treatment of this disease, I have always held that the essential indication is to avoid diarrhœa. It has been, I think, too often thought that this system is one of natural occurrence in Enteric Fever; sometimes it is even relied upon to establish the diagnosis in doubtful cases. But hospital experience does not accord with this view; it has shown us, since the introduction of feeding patients during the acute stage on other substances than milk, that this "characteristic" diarrhœa is often due simply to inability of the patient to digest milk.

When the diet is varied—solid food, properly minced and pounded, being possible in some cases—the occurrence of diarrhœa is greatly diminished; additional points are the avoidance of alcohol as far as possible, and of intestinal antiseptics during the acute stage.

An interesting point is that the occurrence of relapse and perforation has not been increased by the varied feeding. The main thing is to give a patient such food as he can digest; if this includes solid food, the period of convalescence is shortened, and the patient is not subjected to the torture of the hunger that used to be an inevitable accompaniment of an attack of Enteric Fever.

The percentage of intestinal hæmorrhage is somewhat high, but it should be mentioned that this includes every case in which any blood appeared in the motions. Sometimes this occurrence was only slight and temporary; the percentage of severe hæmorrhage was about 5 per cent. Two deaths were due to it.

There were seven cases of perforation of the bowel: of these, two were moribund, and their condition therefore precluded any operative measures; in the remaining five, Laparotomy was performed, and the aperture in the bowel discovered and sewn up—of these one recovered. I am strongly of opinion that operation affords the best—I had almost said, the only—chance of dealing successfully with this complication, and the success of the operation depends on the promptness with which it can be performed, that is to say, on the early diagnosis of the occurrence of perforation. It is important not to wait until the diagnosis has been made evident by the appearance of peritonitis before operating.

The treatment of Enteric Fever generally by cold baths continues to yield good results. The baths are of more value the earlier in the course of the disease that they are begun. Their chief effect is seen in the increased comfort of the patients, the delirium and sleeplessness in particular being less marked when baths are employed.

ENTERIC FEVER.

AGE OF PATIENTS	MALE			FEMALE			TOTAL		
	Ad-mitted	Died	Mor-tality percent.	Ad-mitted	Died	Mor-tality percent.	Ad-mitted	Died	Mor-tality per cent
Under one year...	...	...	...	...	...	...	...	...	...
1 to 2 years...	...	...	...	...	...	...	...	...	...
2 to 3 ,, ...	2	...	...	2	...	...	4	...	...
3 to 4 ,, ...	...	...	...	2	1	50·0	2	1	50·0
4 to 5 ,, ...	2	...	...	3	...	...	5	...	...
5 to 10 ,, ...	12	...	...	17	1	5·8	29	1	3·4
10 to 15 ,, ..	10	1	10·0	16	1	6·2	26	2	7·6
15 to 20 ,, ...	18	3	16·6	18	...	...	36	3	8·3
20 to 25 ,, ...	33	2	6·0	15	2	13·3	48	4	8·3
25 to 30 ,, ...	22	4	18·1	15	5	33·3	37	9	24·3
30 to 35 ,, ...	14	1	7·1	8	1	12·5	22	2	9·0
35 to 40 ,, ...	5	1	20·0	10	2	20·0	15	3	20·0
40 to 45 ,, ...	4	...	...	1	...	...	5	...	...
45 to 50 ,, ...	3	...	...	3	...	...	6	...	...
Over 50 ,, ...	...	...	...	2	1	50·0	2	1	50·0
Total...	125	12	9·6	112	14	12·5	237	26	10·9

Two deaths occurred within 48 hours of admission.

PERCENTAGE COMPLICATIONS IN ENTERIC FEVER.

Complication	No.	Percentage	Complication	No.	Percentage
Bronchitis	1	0·5	Intestinal Hæmorrhage	30	16·3
Pneumonia ...	2	1·1	Perforation ...	7	3·8
Relapse	10	5·4	Neuritis	1	0·5

Average stay in days, in Hospital ....year 1901...40·8 days
Do. Do. ....year 1902...47·8 days

PARTICULARS OF RETURN CASES OF SCARLET FEVER.

No. of alleged originating Cases..73
Do. return Cases..77

TABLE I.

SHOWING DURATION OF STAY IN HOSPITAL OF ORIGINATING CASES.

	Acute Ward	Convalescent Ward
Under 14 days	3	11
14 to 21 ,,	4	19
21 to 28 ,,	13	11
28 to 35 ,,	15	...
Over 28 ,,	...	15
Over 35 ,,	38	...
Not in Convalescent Ward	17	...
Total	90	56

TOTAL STAY IN HOSPITAL.

	Total Residence
4 to 5 weeks	1
5 to 6 ,,	7
6 to 7 ,,	10
7 to 8 ,,	18
8 to 12 ,,	30
Over 12 ,,	7
Total	73

TABLE 2.

SHEWING CONDITION OF DISCHARGE OF ORIGINATING CASE.

Nothing abnormal on discharge	61
Of these nothing abnormal after discharge	46
Otorrhœa subsequently	13
Peeling do.	3
Rhinorrhœa do.	9
Sores on nose or lips subsequently	2
	27
Abnormality on discharge.	
Otorrhœa on discharge	4
Peeling do.	0
Rhinorrhœa do.	2
Sores on nose or lips on discharge	6
	12

The Medical Officer of Health has furnished me this year with particulars of all cases of Scarlet Fever in which he believes infection to have arisen from a patient, whether recently or after the lapse of some weeks, discharged from this hospital. He has ascertained the subsequent condition of the originating case, and I have included this in the above tables. I propose to make some remarks on the clinical side of the question, in so far as this affects the discharge of Scarlet Fever patients from the hospital; there are no return cases of Diphtheria this year.

With Dr. Niven's view that return cases are a hospital phenomenon I agree, and I think with him that the infection of Scarlet Fever, at first intrinsic, subsequently becomes also extrinsic, in the sense that infective matter from other patients is inhaled and stored up in the nostrils and naso-pharynx, where it finds a resting and a breeding place. It is also probable that intrinsic infection ceases about the end of the fourth week in most cases, and that by keeping patients for a fortnight or so before discharge in wards from which acute cases are excluded, and disinfecting the nasal cavities thoroughly during this fortnight, it ought to be possible to send out the patients free from infection.

The method that is adopted here is as follows:—After the throat is free from congestion and desquamation has ceased, except on the feet and hands, provided that a month has elapsed from the onset of the disease, a bath is given, and the nose, ears, and throat well irrigated with a douche (a sterilised nozzle being used) and the skin is anointed with oil containing a small proportion of eucalyptus, this being merely to keep any infection that may be in the skin from being diffused into the atmosphere. The patient is then transferred to a convalescent ward, where he is allowed to go out in the grounds as much as possible (always avoiding contact with acute cases), and the nose, ears, and throat are douched daily with two per cent. solution of permanganate of potash at least once a day, and the bathing and inunction repeated thrice a week. At the end of a fortnight, provided that there is no congestion of the throat, general desquamation, rhinorrhœa, or otorrhœa, the patient is discharged. If mucous discharges are present, every effort is made to cure them by attending (surgically if needs be) to the condition of the throat and nose, but after the discharge has remained in a stationary condition when every effort has been made to cure it, such efforts extending for at least a month in a convalescent ward, the patient is then discharged, as I believe that all the information we have on the point tends to show that further detention can only do harm.

But there are certain limitations to the efficacy of this method: In the first place it is quite impossible, clinically, to say when a patient ceases to be intrinsically infectious; as long as he is so, he will of course infect the convalescent ward. I have assumed that in a month the ordinary patient, that is to say one who is quite well in himself at the end of the first fortnight or thereabouts, will be fit for transfer, but it will be quite impossible to determine this point with accuracy until we not only know but can detect without much difficulty the organism of Scarlet Fever. At present none of the recent work on this point has helped us much in practice.

So we must, I think, assume that the atmosphere and, more important still, the walls, floors, and the dust of the convalescent ward run the risk of infection with the germ of Scarlet Fever, and that this can get into the nasal tract of the patient that contains it.

So we may assume that storage of infectious matter in the nose is possible even in the convalescent ward, and at present we cannot prevent this possibility. It remains to be seen whether we can render it innocuous when it is so stored.

At this point we cease to deal with patients *en bloc*, and are brought face to face with the individual clinical peculiarities of each patient. Still it is possible to generalise to a slight extent.

In the first place, we have reason to think, from the work of M. H. Gordon and others, that the group of cocci which are present in the throats of Scarlet Fever patients and of which the specific organism of Scarlet Fever is probably a member, can be fairly easily killed in vitro by a solution of permanganate of potash of a strength which it is possible to employ *in vivo* without damaging the tissues. Were the organisms lying loose in the nasal cavity, we should expect irrigation with this solution to destroy the infection. Sometimes this may be, and probably is, the case.

If, however, we study the histology of the tonsils and adenoid tissue of patients who have succumbed to an attack of Scarlet Fever, we find that, not only the surface of the organ, but also the lymph spaces for some distance into its interior are crowded with cocci, and this, too, in cases where the organisms are not found in the blood, so have presumably penetrated from the surface.

I think, therefore, that it is probable that the infectious matter in convalescence may also be present below the surface of the turbinate bodies, and adenoid tissue in the naso-pharynx; this is, too, more likely to be the case when there is a state of chronic inflammation, as evidenced by the presence of a nasal discharge. It would also explain why the discharge is so prone to relapse, either in hospital or subsequently, after the discharge, of the patient when an apparent cure has been brought about, probably by the destruction of those organisms only that are lying on the surface of the parts.

It is much to be wished that the histology of the nose in Scarlet Fever could be properly worked out.

We may take it as shewn during the last few years that infection is more difficult to eradicate when there is any chronic inflammatory condition of the mucous membranes; how chronic these infections are only those who have to treat them can form any idea. In some cases good can be done by removing any nasal obstruction; in fact, I am of opinion that there ought in fever hospitals generally to be much more nasal and post nasal surgery than there is, but this is not always possible, as the work requires skill and special experience, and the staff of fever hospitals in this country is not sufficiently large to enable this work to be done. It will be seen, even from the few cases we have here, that of 46 originating cases in whom nothing abnormal was found, no less than 27 relapsed when they were replaced in surroundings presumably not as clean, in the surgical sense, as the hospital. It is possible that they may have become reinfected outside, but on that point I am not in a position to speak, and, in fact, I am more inclined to the belief that this relapse is a hospital phenomenon.

As regards this hospital, I have only to point out that the number of return cases is 77 this year as against 132 in 1901; when this is calculated as a percentage on the number of cases of Scarlet Fever discharged during the year, the figures are 3·8 and 5·0 per cent. respectively, and that there is some hope that this number may be reduced in future owing to the institution, two months ago, of a more reliable method of disinfection of clothing of discharged patients.

Finally, there is the fact that originating cases are more common in children—probably because the contact with other members of the family is more intimate—and especially in those afflicted with the not uncommon combination of rickets, nasal obstruction, and anæmia. Whatever means are adopted to remove infection, this type of patient will always cause difficulty.

BACTERIOLOGICAL EXAMINATIONS.

In addition to the specimens that were sent to the Public Health Laboratory, two thousand bacteriological examinations were made in the hospital by the medical staff in 1902. This does not include the examination of fresh specimens, but only refers to those in which cultivations were made.

The routine is somewhat as follows:—In all cases in which the presence of Diphtheria bacilli is suspected, a preparation is made from the throat or nose, and examined forthwith. If undoubted Diphtheria bacilli are found, the case from which the specimen was taken can be at once isolated, and if necessary treated with antitoxin. In any case, the presence of the bacilli is confirmed by subsequent cultivation, each tube being examined at the end of eight, and again at the end of twenty-four hours growth, and the result recorded. Whenever nasal or aural discharge occurs in the course of Scarlet Fever a specimen is taken and examined for Diphtheria bacilli, and in all throats that are at all suspicious a bacteriological examination is also made. In any case of doubt, a specimen is also sent to the Public Health Laboratory, and I must here express my great obligation to Professor Delépine for the care he has taken with these specimens, and also for the advice and help he has given me in all matters in which we have been associated.

In a large number of cases, Diphtheria bacilli have been found, and it has also been clear that these patients are not suffering from Diphtheria. There can, however, be now no doubt that these bacilli, though harmless to the patient in whom they exist, are capable of causing true Diphtheria in other patients under favourable circumstances. At this hospital, all such cases are isolated, and I believe that this procedure is the chief reason for the very low incidence of post scarlatinal Diphtheria that obtains here. Recently we have found that these bacilli are very frequently present in the ear in case of Scarlet Fever, but as this will form the subject of a special report later on, I do not wish to say more about the matter at present.

OTHER DISEASES.

The distribution of the other diseases is shown in the annexed table :—

OTHER DISEASES.

Certified as	Actual Disease	No.
Scarlatina	Morbilli	11
"	No obvious disease	23
"	Tonsillitis	41
"	Erythema	17
"	Tubercular Meningitis	3
"	Pneumonia	2
"	Rötheln	3
"	Diphtheria	6
"	Enteric Fever	8
"	Rhinitis	2
"	Rheumatism	2
"	Eczema	1
"	Varicella	3
"	Empyema	1
"	Chorea	1
"	Bronchitis	1
"	Pleurisy	1
Diphtheria	Tonsillitis	29
"	Scarlatina	7
"	Tubercular Peritonitis	1
"	No obvious disease	2
"	Laryngitis	1
"	Post Nasal Catarrh	1
Diphtheria	Post Pharyngeal Abscess	1
Enteric Fever	No obvious disease	2
"	Pneumonia	8
"	Phthisis	5
"	Influenza	6
" ?	Ulcerative Endocarditis.	1
"	Enteritis	3
"	Tuber Disease, Hip Joint	1
"	Tubercular Meningitis	1
"	Pleurisy	1
"	Febricula	3
"	Bronchitis	1
Morbilli	Rötheln	1
Erysipelas	Varicella	1
"	Erythema	1
"	Dermatitis from Irritant	1
Sent in with Mother	....	2

19 deaths, 4 occurred within 48 hours of admission. Total mortality of other diseases 8·5 per cent.

Erysipelas.

Age of Patients	Male			Female			Total		
	Ad-mitted	Died	Mor-tality per cent.	Ad-mitted	Died	Mor-tality per cent.	Ad-mitted	Died	Mor-tality per cent.
Under 5 years ...	1	...	...	2	...	...	3	...	...
5 to 10 ,, ...	1	...	...	1	...	...	2	...	...
10 to 15 ,, ...	...	...	...	2	...	...	2	...	...
15 to 20 ,, ...	2	...	...	...	...	...	2	...	...
20 to 25 ,, ...	...	...	...	4	...	...	4	...	...
25 to 30 ,, ...	3	...	...	1	...	...	4	...	...
30 to 35 ,, ...	2	...	...	2	...	...	4	...	...
35 to 40 ,, ...	2	1	50·0	2	...	...	4	1	25·0
40 to 45 ,, ...	2	1	...	1	...	...	3	1	33·3
45 to 50 ,, ...	1	...	...	4	...	...	5	...	...
Over 50 ,, ...	6	3	50·0	3	...	...	9	3	33·3
Total...	20	5	25·0	22	...	...	42	5	11·9

It will be seen that 126 patients certified to be suffering from Scarlatina were found, on admission or subsequently, not to have that disease, and, similarly, in the case of Diphtheria there were 42 patients suffering from some other disease. This amounts to an error in diagnosis in 6·2 per cent. of the Scarlet Fever admissions, and 16 per cent. in the case of Diphtheria. Of the Enteric Fever admissions, 32, or 13 per cent, were not suffering from that disease. In the cases returned as having no obvious disease, it should be noted that while they were not ill on admission, they were sent in because they were supposed to have had the certified illness previously; in each case care was therefore taken to ascertain that this could not have been the case. The term Erysipelas includes not only the cutaneous manifestation of that disease, but also the various forms of cellulitis, especially those that attack wounds. All those who died were in a hopeless condition when admitted. The association of this disease with chronic alcoholism was very frequently observed in the cases admitted during the past year.

In conclusion, I wish to express my thanks to the Chairman and those members of the Hospital Committee who have visited the Hospital for much valuable advice in matters connected with the administration of the Hospital, and for the trouble, often considerable, that they have taken to investigate any questions that have arisen. Their numerous acts of kindness also to me personally have considerably lightened the—at times—anxious work that the superintendence of a large Hospital entails.

A. Knyvett Gordon.

January, 1903.

REPORT BY MR. A. T. ROOK, SUPERINTENDENT OF THE SANITARY DEPARTMENT.

Sanitary Department,
Town Hall, Manchester.

In presenting to the Medical Officer of Health the report of the work transacted in the Sanitary Department for the year ending 30th April, 1902, I beg to state that the City, for inspection and other purposes, is divided into 28 Districts, to each of which one Sanitary Inspector has been assigned.

In addition to these, there is a Superintendent, one Chief Inspector, two Drainage, four Smoke, one Canal Boats and Lodging-house, two Adulteration of Food, six Factory and Workshops Inspectors, including two Female Inspectors, and two Drain Examiners.

There is also a staff of 25 Clerks and one Surveyor for clerical and other work.

In the House Drainage Department there are also six Clerks of Works for supervising and measuring up work done by the contractors employed by the department in carrying out private drainage work.

The number of complaints of nuisances of various kinds made during the year was 46,170, viz.:—

22,422	through the Medical Officer of Health's Department.
2,201	by the Public.
233	through the Police.
21,314	by the Staff.

HOUSES LET IN LODGINGS.

Under the powers given by section 90 of the Public Health Act, the bye-laws made thereunder have been enforced.

The number of houses on the register is 1,296.

To these, 1,033 day visits and 1 night visit have been paid.

Two infringements of the regulations have been reported and dealt with.

One visit has also been paid to an unregistered house, the occupier having previously denied that lodgers were kept.

DAIRIES, MILKSHOPS, AND COWSHEDS REGULATIONS.

Under this Order, which was made in July, 1879, and the Regulations thereunder in 1896, 2,756 milkshops and dairies and 83 cowkeepers are now on the register. The number of cows kept is 1,103. The number of visits to dairies, milkshops, and cowsheds was 1,508. Five cowsheds have been closed as being unfit for use on sanitary grounds.

Many of the cowsheds have been much improved since last year, but there are still a few in an unsatisfactory condition, and steps are being taken to improve these.

WORKSHOPS, BAKEHOUSES, SHOP HOURS, AND SEATS FOR SHOP ASSISTANTS ACTS.

During the year the Acts have been well observed, only a few persons having been reported for infringements.

Shop Hours Act

As regards the Shop Hours Act, experience still further confirms the opinion previously expressed that in the absence of a declaration specifying the working hours for each day, as in the case of the Factory and Workshop Acts, it is difficult to produce sufficient evidence to justify prosecutions, the evidence of the young persons in nearly every instance, probably through the influence of their employers, or other reasons, contradicting the signed declarations previously made to the Inspectors.

Workshop Acts.

Great improvements have been effected since the last report in the condition of workshops, many alterations having been made—either after notice or at the request of the Inspectors – to improve the ventilation, lighting, overcrowding, cleansing, and general sanitary conditions.

Special attention has also been given to see that premises are provided with sufficient and satisfactory closet accommodation, this being a common defect in a number of the largest workshops.

In nearly all the cases reported the necessary accommodation has been provided, and others are under notice, and will be dealt with in due course.

Means of escape in case of fire.

With regard to means of escape in case of fire, the whole of the factories and workshops in the City have been inspected, and with very few exceptions are now considered safe.

Periodical changes will, of course, from time to time take place in various ways which will bring buildings within the meaning of the Act, and necessitate the constant supervision of the Inspectors, and action on the part of the authorities.

Bakehouses.

During the year several more of the worst bakehouses in the City have been absolutely closed, and a number of others have been reported by the Medical Officer of Health to be unfit for use until satisfactory alterations are made to place the premises in a better sanitary condition.

Extensive alterations have been made in many of the bakehouses, and a general improvement is manifest throughout the City consequent upon the action taken by the department.

Out-workers.

Many visits have been paid to houses in which out-work is carried on, as will be seen on reference to the following tabulated statement, but constant visitation is necessary to maintain the standard of cleanliness which is to be desired, especially in houses in which shirt-making, handkerchief-hemming, brace-making, and umbrella-covering, etc., is done. This class of work is almost exclusively confined to the poorer people, who live in small houses in the congested parts of the City.

The people, as a rule, appear willing to carry out any suggestion made by the Inspectors to keep their houses clean ; but at the same time it is almost impossible for small houses, sometimes containing large families, to be kept in such a satisfactory condition as workshops.

Seats for Shop Assistants Act.

This Act, without the necessity of any legal proceedings, has been complied with by all the shopkeepers of the City.

The work done under the above Acts is shown in the following tables.

SHOWING THE WORK DONE BY THE INSPECTORS UNDER THE SHOP HOURS, SEATS FOR SHOP ASSISTANTS, AND FACTORY AND WORKSHOP ACTS.

Number of District	INSPECTOR	SHOPS					SHOPS					WORKSHOPS						Number of visits to houses where outworkers are employed	Factories and Workshops not provided with proper means of escape in case of fire	BAKEHOUSES					
		Shop Hours Act					Seats for Shop Assistants Act																		
		Number of visits	Number of Infringements of Act reported	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register	Number of visits	Number of infringements of Act reported	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register	Number of visits	Number in which Sanitary Defects were found	Number of Reports referred to Factory Inspector (unregistered factories, &c.)	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register			Number of visits	Number in which Sanitary defects were found	Number of reports referred to Factory Inspector	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register
1	Joseph H. Fowles.	5	...	..	...	597	...	...	...	...	146	3385	389	227	15	276	1254	...	23	557	18	3	7	4	81
2	John Kewley ...	8	...	...	...	972	...	...	...	...	296	2755	196	90	13	178	983	4	8	891	57	10	...	16	174
3	Ernest Bailey ...	19	1	...	1	567	...	...	...	...	197	2465	180	94	7	150	943	1	1	1080	123	1	...	12	143
4	Francis J. Rowe..	8	...	...	2	660	...	...	...	...	256	3235	246	102	1	179	1117	1	4	747	12	1	...	6	151
...	Emma Coppock..	996	4	4	173	...	474	...	...	131	...	2383	93	1	...	...	...	678	...	...	...	...	...	...	...
...	Ethel Stewart & Margt. L. Brown	2202	1	1	177	...	243	...	...	175	...	1473	57	...	2	...	...	747	...	...	...	...	...	...	...
...	TOTALS ...	3238	6	5 *	353	2796	717	...	...	306	895	15696	1161	514	38 *	783	4297	1431	36	3275	210	15	7 *	38	549 †

* For particulars see Table No. .

† 160 are Cellar Bakehouses.

PROSECUTIONS FOR OFFENCES, WITH RESULTS.

Name of Offender	Address of Offender	Offence	Amount of Fine Imposed			Amount of Costs ordered to be Paid			Dismissed, Withdrawn, &c.
			£	s.	d.	£	s.	d.	
Thomas Hand	74, Rusholme Road	Employing a young person over 74 hours a week	0	10	0	0	17	0	
Abraham Levy	693, Ashton Old Road	Not exhibiting Abstract of Shop Hours Act in his shop	0	10	0	0	8	6	
Charles and William Merrill	457, Ashton Old Road, Clayton	Ditto ditto	0	5	0	0	5	0	
John Ruskin and Co.	16, Church Street, City	Ditto ditto	0	10	6	0	8	6	
Ditto	Ditto	Obstructing the Inspector in the execution of her duty	......			......			Withdrawn
Louis Cohen	21, Honey Street, Cheetham	Having his bakehouse in a dirty state	2	0	0	0	8	6	
Simon Rubenstein	37, Bury New Road	Ditto ditto	0	10	0	0	8	6	
John Grierson	133, Great Ducie Street	Ditto ditto	0	5	0	0	5	0	
Julius Jacobson	124, Bury New Road	Ditto ditto	1	1	0	0	8	6	
Jacob Kafkevitch	4, Scotland, Red Bank	Ditto ditto	1	1	0	0	8	6	
Meyer Solomon	41, Lord Street Cheetham	Ditto ditto	1	1	0	0	8	6	
John Sharp	47, Long Millgate	Ditto ditto	......			......			Withdrawn (bakehouse closed)
Wm. Lewis Glasier	36, Percival Street, Chorlton-upon-Medlock	Neglecting to limewash his workshop after notice	......			......			Withdrawn (work done)
David Mark	9, Brook Street, London Road.	Ditto ditto	......			0	3	0	Withdrawn
Walter Coogan	26 to 32, Hardman Street, Deansgate	Ditto ditto	1	0	0	0	8	6	
Morris Green	24a, Johnson Street	Ditto ditto	0	5	0	0	5	0	
		Carried forward ......£	8	18	6	5	3	0	

PROSECUTIONS FOR OFFENCES, WITH RESULTS—*continued.*

Name of Offender	Address of Offender	Offence	Amount of Fine Imposed			Amount of Costs ordered to be Paid			Dismissed, withdrawn, &c.
			£	s.	d.	£	s.	d.	
		Brought forward.........	8	18	6	5	3	0	
Joseph Jolly	66, Great Ancoats Street.........	Neglecting to limewash his workshop after notice	......			0	3	0	Withdrawn
Betsy Greenberg ...	44, Great Ducie Street	Ditto ditto ...	......			......			Ditto (work done)
Alfred Lucas.........	1a, Hilton Street, Harpurhey...	Neglecting to cleanse closet of workshop (after notice)	......			......			Ditto
Robert C. Haworth.	19, Cooper Street, City	Neglecting to repair yard of workshop, 3, Waterloo Road, after notice	......			......			Ditto
Samuel Mabbott ...	74, Market Street	Neglecting to repair roof and eaves gutter of workshop, 64, Addington Street, after notice	......			0	3	0	Ditto
Joseph Sykes.........	882, Rochdale Road	Neglecting to partition off workshop in Bassett Street, Queen's Road, from stable adjoining after notice	......			......			Withdrawn (stable discontinued)
George Hartley......	26, Brazennose Street...........	Neglecting to provide and maintain efficient ventilation to workshop, No. 24a, Johnson Street, after notice	......			......			Withdrawn
James Taylor.........	105, Port Street, Piccadilly ...	Neglecting to paint walls and limewash ceiling of workshop and cleanse closet after notice	0	5	0	0	5	0	
Joseph Sherlock ...	26, Dale Street	Neglecting to repair defective ceiling of workshop, No. 83, Ardwick Green, after notice	......			......			Withdrawn (work done)
		Carried forward ......£	9	3	6	5	14	0	

PROSECUTIONS FOR OFFENCES, WITH RESULTS—*continued.*

Name of Offender	Address of Offender	Offence	Amount of Fine Imposed			Amount of Costs ordered to be Paid			Dismissed, Withdrawn, &c.
			£	s.	d.	£	s.	d.	
		Brought forward	9	3	6	5	14	0	
John Aspinall	8, Hall Street, Moston	Neglecting to repair wash-house floor of workshop, No. 274, Oldham road, Miles Platting, after notice	......			......			Withdrawn (work done)
Wm. B. Shorland	25, Albert Street	Neglecting to repair roof of workshop, No. 29, Albert Street, City, after notice	......			......			Ditto
John Alker	25, Brazennose Street	Ditto 3, Young Street	......			......			Ditto
John Wilkinson	6, St. Oswald Street	Ditto 3, Paley Street	......			0	8	0	Order of abatement made
John Wainwright	27 and 29, Cannon Street	Ditto and ceiling of Nos. 61 and 63, Temple Street	......			0	8	0	Ditto
Joseph Sherlock	26, Dale Street	Ditto and staircase of No. 83, Ardwick Green North	......			......			Withdrawn (work done)
William B. Shorland	25, Albert Street	Neglecting to provide light, also a door to the water-closet of workshop No. 14, Tomlinson Street, Hulme, after notice	......			0	8	0	Order of abatement made
Geo. Thornborough	59, Chapel Street, Ancoats	Neglecting to cleanse the closet of his workshop after notice	......			0	8	0	Ditto
		Total £	9	3	6	7	6	0	

SMOKE NUISANCES.

For the abatement of smoke nuisances, the four Inspectors appointed specially for this work have taken 808 timed observations of half-an-hour each, with the result that 135 notices for the abatement of nuisances have been served. Proceedings before the Magistrates have been ordered in 146 cases out of 201 offences reported. These cases were disposed of as follows :—

One hundred and forty-four were summoned before the justices, in 108 of which fines were imposed amounting to £265 5s. od, and costs £59 7s. od.

Thirty-three orders of abatement were granted and served, 4 cases were excused, dismissed, or withdrawn. (In one case a fine was imposed in addition to an order of abatement being granted.)

Much attention during the past year, as will be seen by the above, has been given to the nuisance caused by the emission of black smoke, not only from the furnaces connected with boilers in mills, warehouses, and other works, but also from chemical and other industries, and the efforts made have already resulted in a considerable reduction of the nuisance. It may be stated that representations have been made to other Authorities on the North-East and West sides of the City, in regard to the great pollution of the air of the City by the excessive emission of smoke from the chimneys in their districts.

SALE OF FOOD AND DRUGS ACTS AND MARGARINE ACT.

Under these Acts, the two Inspectors specially appointed have purchased for analysis 1,732 samples. Of these, 74 were adulterated, viz. :—

Butter	25
Cheese	1
Milk	41
Mustard	1
Spirits	1
Vegetables (tinned or bottled)	5

Sixty-eight summonses were issued. In 44 cases fines were imposed amounting in the aggregate to £66 9s. od., with costs £76 13s. od. Seven persons were ordered to pay costs only.

Seventeen summonses were dismissed or withdrawn.

Appended are tables showing the result of the action taken under the Acts since 1873.

Showing the number of Articles of Food and Drugs procured for Analysis, the number Adulterated, the number informally purchased or in which no proceedings were taken, and the number of cases in which Magisterial Proceedings were taken, together with the Decisions and the Total Amount of Fines imposed from May 1st, 1873, *to April 30th,* 1902.

Article	No. Procured	No. Adulterated	No. informally purchased or in which no proceedings were taken	No. Summoned before Magistrates						
				No. Summoned	No. Fined	No. of Warrants granted	No. ordered to pay Costs only—Dismissed or Withdrawn	Total Amount of Fines Imposed £	s.	d.
Arrowroot	6	...	...	...	...	...	...	......		
Bacon	1	...	...	...	...	...	...	......		
Baking Powder	30	...	...	...	...	...	...	......		
Beef Dripping	1	...	...	...	...	...	...	......		
Beer	488	72	34	38	19	...	19	38	0	0
Bread	1064	39	7	32	32	...	...	119	10	0
Butter	2048	348	26	322	255	3	64	441	19	6
Buttermilk	2	2	2	...	...	...	...	......		
Cheese	181	8	4	4	3	...	1	8	10	0
Chicory	43	...	...	...	...	...	...	......		
Cider	3	...	...	...	...	...	...	......		
Cocoa	14	...	...	..	...	...	...	......		
Cod Liver Oil	6	...	...	...	...	...	...	......		
Coffee	522	40	2	38	37	...	1	57	15	6
Confectionery	286	2	...	2	2	...	...	10	0	0
Cream	12	...	...	...	...	...	...	......		
Drugs	370	10	9	1	1	...	...	0	5	0
Fish (tinned)	1	...	...	...	...	...	...	......		
Flour	106	...	...	...	...	...	...	......		
Fruit (tinned)	2	...	...	...	...	...	...	......		
Jams	217	1	...	1	1	...	...	1	0	0
Jelly	2	...	...	...	...	...	...	......		
Ketchup	1	...	...	...	...	...	...	......		
Lard	665	27	5	22	18	...	4	44	3	6
Margarine	78	...	..	...	...	...	...	......		
Meats (tinned)	6	...	...	...	...	...	...	......		
Milk	19719	1466	22	1444	985	..	459	2915	11	6
Milk (skimmed)	149	23	...	23	18	...	5	39	1	6
Milk (condensed)	6	...	...	...	...	...	...	......		
Mineral Waters, &c.	255	79	76	3	...	...	3	......		
Carried forward	26284	2117	187	1930	1371	3	556	3675	16	6

ANALYSIS—*continued.*

Article	No. Procured	No. Adulterated	No. informally purchased or in which no proceedings were taken	No. Summoned before Magistrates						
				No. Summoned	No. Fined	No. of Warrants granted	No. ordered to pay Costs only—Dismissed or Withdrawn	Total Amount of Fines Imposed		
								£	s.	d.
Brought forward	26284	2117	187	1930	1371	3	556	3675	16	6
Mustard..	306	45	6	39	33	..	6	18	19	0
Oatmeal..................	113	...	...	...	...	...	...	......		
Olive Oil	12	1	...	1	1	...	...	0	2	6
Pepper	561	5	...	5	4	...	1	1	7	6
Pickles	4	...	...	...	...	...	...	......		
Porter	8	...	...	...	...	...	...	......		
Rice, Tapioca, &c.......	102	...	...	...	...	...	...	......		
Spices	216	1	...	1	...	...	1	......		
Spirits	1021	42	7	35	32	...	3	62	7	0
Sugar.....................	65	...	...	...	...	...	...	......		
Tea	370	...	...	...	...	...	...	......		
Treacle	29	10	7	3	2	...	1	2	0	0
Tripe	1	...	...	...	...	...	...	......		
Vegetables (tinned) ...	14	7	6	1	...	...	1	......		
Vinegar..................	127	8	...	8	7	...	1	2	10	6
Wines	35	...	...	...	...	...	...	......		
Totals............	29268	2236	213	2023	1450	3	570	3763	3	0

Other Offences against the Acts.

Offence	No. Summoned	No. Fined	No. Dismissed or Withdrawn	Total amount of Fines imposed		
				£	s.	d.
Refusing to serve Inspector with Samples of Food	22	22	...	73	2	6
Giving False Warranty	17	5	12	26	0	0
Obstructing Inspector in the execution of his duty..	1	...	1	......		
Selling Milk from a vehicle which had not the name and address of the person inscribed thereon	4	4	...	0	10	0
Totals.....................	44	31	13	£99	12	6

Total amount of Penalties for Adulteration...............	£3,763	3	0
Total amount of Penalties for Other Offences	99	12	6
Grand Total.........	£3,862	15	6
Total amount of Penalties against Farmers	£1,812	15	0

Showing the number of persons summoned more than once under the Adulteration of Food and Drugs and Margarine Acts from May 1*st*, 1873, *to April* 30*th*, 1902.

MILK DEALERS.

No.	Article	1st Offence	2nd Offence	3rd Offence	4th Offence	In County (Salford)
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1	Milk.	0 5 0 *8 W*	Withdrawn *10 W*	1 0 0 *16 W*	……	……
2	Do.	10 0 0 *60 F*	10 0 0 *11½ F*	……	……	……
3	Do.	10 0 0 *66 F*	5 0 0 *64 F*	1 0 0 *9½ W*	5 0 0 (*Skimmed Milk*) *8 W*	10 0 0 2 0 0 1 0 0 5 0 0
4	Do.	0 10 0 *6½ W & 5 F*	2 0 0 *9 W*	……	……	……
5	Do.	3 0 0 (Refusing)	10 0 0 *9 W*	5 0 0 *56 F*	……	……
6	Do.	2 0 0 *11 W*	2 cases Withdrawn (Farmer fined) *20 F each*	2 0 0 *10 W & 17 F*	5 0 0 *44 F*	……
7	Do.	2 0 0 *5 W*	Withdrawn *11½ W*	6 0 0 *1½ W & 15 F*	10 0 0 *2 W & 33 F*	……
8	Do.	3 0 0 *10 W & 25 F*	1 0 0 *5 W*	……	……	……
9	Do.	1 1 0 *24 W*	1 1 0 *30 F*	……	……	……
10	Do.	1 0 0 *10 W*	5 0 0 (Refusing)	15 0 0 *30 W*	……	……
11	Do.	2 0 0 (Refusing)	Withdrawn (Farmer fined) *8 F*	2 10 0 *12 W*	5 0 0 *8 W*	……
12	Do.	2 0 0 *10 W*	Withdrawn (Farmer fined) *7 W*	2 0 0 *5 W*	……	……
13	Do.	1 0 0 *40 F*	1 0 0 *7 W*	5 0 0 (Refusing)	……	……
14	Do	1 1 0 *8½ W*	5 0 0 *14 W*	2 0 0 *12 W*	1 10 0 *8 W*	2 0 0 20 0 0
15	Do	10 0 0 *20 W*	5 0 0 *13 W*	5 0 0 *10 W*	……	……

The figures in *Italic* denote the percentage of water added and fat abstracted.

Farmers.

No.	Article	1st Offence	2nd Offence	3rd Offence	4th Offence	5th Offence	6th Offence	7th Offence	8th Offence	9th Offence	10th Offence	In County
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
				Heard same day								
16	Milk	4 0 0 *7 W*	10 0 0 *4½ W*	20 0 0 *10 W*	Dismissed *9½ W*	Dismissed *8 W*	...	...	...	...	...	15 0 0 (Strangeways)
		Heard same day		*Heard same day*								
17	Do.	5 0 0 *12 W*	Costs only *26 W*	Dismissed *4½ W*	Dismissed *6½ W*	3 0 0 *10½ W*	3 0 0 *11½ W*	...	...	...	...	..
18	Do.	10 0 0 *33 F*	2 cases 20 0 0 *28 F* *28 F*	...	...	...	...	...	.	...	...	...
19	Do.	15 0 0 (In 2 cases) *20 F* *20 F*	15 0 0 (In 3 cases) *4½ W* *5 W* *8 W*	...	...	...	...	...	...	...	Hanley, Staffs.	40 0 0 (In 4 cases)
20	Do.	2 cases Dismissed *4 W & 8 W*	Dismissed *10 W*	...	...	...	...	...	...	...		2 0 0 Gorton *8 W*
21	Do.	2 0 0 (In 3 cases) *6 W* *4 W* *10 W*	4 0 0 (In 2 cases) *8 F* *13 F*	...	...	...	...	...	...	...	...	...
22	Do.	5 0 0 *7½ W*	2 0 0 (In 2 cases) *28 F* *10 F*	...	...	...	...	. .	...	...	...	..
23	Do.	10 0 0 (In 2 cases) *10 W* *4½ W*	1 0 0 (In 4 cases) *16 F* *45 F* *30 F* *31 F*	...	...	...	...	...	...	...	...	..
24	Do.	2 0 0 *8 W*	10 0 0 *10 W*	5 0 0 (Refusing)	...	...	..	...	...	...	...	...
25	Do.	2 0 0 *4½ W*	2 0 0 (In 2 cases) *9½ W* *6 W*	...	...	...	...	...	...	...	...	..
26	Do.	4 0 0 (In 2 cases) *28 F* *33 F*	10 0 0 (In 2 cases) *10 F* *10 W*	...	...	...	...	...	...	...	...	.

The figures in *Italic* denote the percentage of water added and fat abstracted.

Farmers—*continued.*

No.	Article	1st Offence	2nd Offence.	3rd Offence	4th Offence	5th Offence	6th Offence	7th Offence	8th Offence	9th Offence	10th Offence	In County
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
27	Milk	15 0 0 *30 W*	20 0 0 *39 W*	10 0 0 (Refusing)	10 0 0 (Refusing)	10 0 0 *14 W*	5 0 0 (Refusing)	20 0 0 *14 W*	20 0 0 *12 W*	10 0 0 *15 W*	10 0 0 *8 W*	20 0 0 (Strangeways)
28	Do	2 0 0 *12 F*	5 0 0 *4½ W* *15 F*	...	...	...	...	...	...	...	...	...
29	Do.	2 0 0 (In 2 cases) *20 W* *29 W*	2 0 0 *23 W*	...	...	...	...	...	...	...	...	...
30	Do	4 0 0 (In 2 cases) *7 W* *10 W*	5 0 0 (In 2 cases) *8 W* *8 W*	...	...	...	...	...	...	...	...	...
31	Do	5 0 0 *20 F*	5 0 0 *13 W*	...	...	...	...	...	...	...	...	...
32	Do.	1 0 0 *10 F*	5 0 0 *20 F*	10 0 0 *6 W*	2 cases 5 0 0 *10 W* *6 W*	5 0 0 *12 F*	2 0 0 *6 W*	...	...	...	...	...
33	Do.	3 0 0 *12½ W*	5 0 0 *8 W*	...	...	...	...	...	...	...	...	...
34	Do.	15 0 0 (In 3 cases) *7 W* *12 W* *11 W*	10 0 0 *20 W*	...	...	...	...	...	...	...	...	...
35	Do.	2 0 0 *10 F*	5 0 0 *11 W*	5 0 0 *11 W*	3 cases 20 0 0 *11 W* *15 W* *15 W*	...	...	...	...	...	Altr'ncham Salford Do.	Dismissed 2 0 0 2 0 0
		Heard same day										
36	Do.	15 0 0 *17 W*	5 0 0 *17 W*	...	...	...	...	...	...	...	Salford L'pool Do.	10 0 0 10 0 0 10 0 0
37	Do.	10 0 0 (In 2 cases) *44 F* *25 F*	5 0 0 *8½ W &* *7 F*	...	...	...	...	...	...	...	...	...
38	Do.	2 cases 5 0 0 5 0 0 *7 W* *10 W*	2 cases 10 0 0 10 0 0 *16 W* *13 W*	...	...	...	...	...	...	...	...	...
39	Do.	2 cases 1 0 0 1 0 0 *17 F* *20 F*	10 0 0 *7 W*	...	...	...	...	...	...	...	...	...
40	Do.	2 cases 2 0 0 2 0 0 *7 W* *3 W*	2 0 0 *6 W*	...	...	...	...	...	...	...	...	...

The figures in *Italic* denote the percentage of water added and fat abstracted.

BUTTER CASES.

No.	1st Offence	2nd Offence	3rd Offence	4th Offence
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
41	Costs only July 19th, 1878 (Butterine)	2 0 0 Dec. 7th, 1887 (Butterine)	Withdrawn Jan. 11th, 1893 (Excess Water) *10 per cent.*	Withdrawn Jan. 11th, 1893 (Excess Water) *8½ per cent.*
42	2 0 0 Jan. 13th, 1886 (Butterine)	1 0 0 Dec. 7th, 1887 (Butterine)	....	....
43	2 0 0 April 16th, 1884 (Butterine)	2 0 0 Jan. 15th, 1886 (Butterine)	Costs only Jan. 10th, 1894 (Packet not marked Margarine)	....
44	2 0 0 April 16th, 1884 (Butterine)	3 0 0 Dec. 22nd, 1886 (Butterine)	3 0 0 March 5th, 1890 (Margarine)	3 0 0 March 5th, 1890 (Margarine)
45	2 0 0 May 21st, 1884 (Butterine)	5 0 0 Jan. 13th, 1886 (Butterine)	5 0 0 Dec. 7th, 1887 (Butterine)	....
46	0 10 0 Dec. 7th, 1887 (Butterine)	Dismissed March 14th, 1894 (Excess Water) *6 per cent.*	Dismissed March 14th, 1894 (Excess Water) *5½ per cent.*	....
47	2 0 0 March 31st, 1886 (Butterine)	1 1 0 May 2nd, 1888 (Margarine)	....	....
48	Dismissed April 8th, 1885 (Butterine)	2 0 0 Dec. 7th, 1887 (Butterine)	....	...
49	Do.	Do.	....	....
50	2 0 0 April 16th, 1884 (Butterine)	10 0 0 Nov. 13th, 1889 (Margarine)	....	....
51	1 1 0 Dec. 7th, 1887 (Butterine)	2 0 0 April 17th, 1889 (Margarine)	....	....
52	5 0 0 March 21st, 1888 (Margarine)	Withdrawn Jan. 11th, 1893 (Excess water) *9 per cent.*	....	....
53	0 5 0 March 13th, 1889 (Margarine)	Dismissed Jan. 23rd, 1894 (Excess Water) *11½ per cent.*	....	....
54	0 5 0 Oct. 3rd, 1888 (Margarine)	Dismissed March 14th, 1894 (Excess Water) *7 per cent.*	....	....

The figures in *Italic* denote the percentage of water added and fat abstracted.

BUTTER CASES—*continued*

No.	1st Offence	2nd Offence	3rd Offence	4th Offence
	£ s. d.	£ s. d.	£ s. d.	
55	1 0 0 Nov. 23rd, 1892 (Margarine)	2 0 0 Oct. 20th, 1897 (Margarine)	5 0 0 March 8th, 1899 (Foreign Fat) *80 per cent.*	....
56	1 0 0 Nov. 21st, 1894 (Margarine)	10 0 0 July 26th, 1899 (Margarine)	....	....
57	2 0 0 April 1st, 1896 (Margarine)	3 0 0 Dec. 1st, 1897 (Margarine)	....	....

The figures in *Italic* denote the percentage of water added and fat abstracted.

CANAL BOATS ACTS.

The number of canal boats on the register is 470.

The number of inspections made was 1,809, resulting in five infringements of the Act being discovered, which were referred to the Justices to be dealt with; in all the cases fines were imposed amounting in the aggregate to £1 8s. 0d., and the costs £2 0s. 0d.

Sixty caution notices were sent to the owners and masters.

OFFENSIVE TRADES.

The number of offensive trades on the register is 673. These have been placed under close supervision, and periodical visits paid.

UNHEALTHY DWELLINGS.

During the year, 265 houses were certified to be dealt with by the Sanitary Committee.

Of these, 205 were ordered to be closed.

In the majority of these the owners arranged to make alterations to meet the requirements of the Corporation.

PARTICULARS RELATING TO THE OPERATIONS OF THE CLEANSING DEPARTMENT.

Cleansing Department,
Town Hall, Manchester,
May 5th, 1903.

Dear Sir,—There are within the City: pail-closets, 71,560; ash-boxes, 67,432; midden-privies, 19,490; wet middens, 10,005; dry middens, 720; water-closets, 49,056; and cesspools, 87. The pail-closets are systematically emptied at regular intervals—once, twice, or thrice weekly, as necessity demands. The midden-privies are emptied as required. The contents of the pail-closets are taken to Holt Town and Water Street. At Holt Town the fæcal matter is dried into concentrated manure. The dry refuse is consumed in the Galloway boilers, and generates the steam required for working the machinery. The worthless fine ash, which cannot be consumed, is deposited at the nearest tip at Clayton Vale. The privy refuse and fæcal matter, which is taken to Water Street, is sent away in its crude state as nightsoil to Carrington and Chat Moss Estates and to farmers in Cheshire. Dry combustible matter is passed into the destructor furnaces or under the Galloway boilers at Water Street, and there destroyed. A large quantity of fine ash at Water Street is used as an absorbent for the fæcal matter from the pail-closets.

The market garbage, of which we have 5,590 tons per annum, is carted to Water street, and destroyed in the furnaces. Slaughter-house refuse is collected from the abattoirs and private slaughter-houses and sent to Holt Town, where it is passed through dryers, and the dry material is then added to the concentrated manure. Street sweepings are generally deposited at the nearest depot, and after being allowed to drain are carted to the nearest tip, or to the Water Street Depot, from whence they are sent away by boat to farmers or the Committee's Estates.

The total quantity of material collected by this Department during the past year amounted to 401,485 tons, including 83,340 tons deposited at the Clayton Vale tip for the formation of an embankment for the Electricity Committee Railway.

We have within the City about 34 destructor furnaces of different kinds, and last year 13,725 tons of mortar was made from the clinker obtained from such furnaces.

We employ about 49 "orderly" youths and men, who collect horse-droppings and litter from the streets, and deposit the same in the bins fixed in the footpaths. The contents of the bins are removed twice daily, and taken to the nearest depôt.

Acting upon instructions received from you, special pails and lids are supplied for all cases of Enteric Fever; labels are attached to the pails, asking the occupants to use disinfectants, which are supplied with the pails; the pails are left in the yard, and not placed in the ashplace. The occupants of the houses are requested to use this special pail for the reception of the fæcal matter and washings from the patient only. The pails are removed in a specially-constructed vehicle, and taken to Holt Town Depot, where the contents are destroyed.

With regard to the cleansing of passages, we have a staff of about 34 men engaged specially upon this work. They regularly, at least once a week, cleanse the back passages in certain districts, and during last year 144,623 swillings and cleansings were effected in courts and passages.

During the year, 47,395 barrels of water were used in degging the streets, and 274,230 grids were unstopped.

During the past 11 years, we have deposited upon the various tips within the City the following quantities of material, viz. :—In 1892, 99,866 tons; 1893, 109,078 tons; 1894, 103,949 tons; 1895, 113,836 tons; 1896, 107,883 tons; 1897, 99,658 tons; 1898, 96,635 tons; 1899, 104,481 tons; 1900, 95,138 tons; 1901, 64,781 tons; 1902, 117,619 tons; and in 1903, 180,985 tons (including 83,340 tons received at Clayton for the Electricity Committee's Railway embankment.) The bulk of this material was deposited on the tips at Clayton and Harpurhey. It is composed principally of dry ashes, street sweepings, and bell-dust. Occasionally the contents of dry middens are sent there. During last year 19,763 tons of material was sent to Carrington Estate and 62,682 to Chat Moss Estate.

Yours faithfully,

R. WILLIAMSON,

Superintendent.

Dr. Niven,

Medical Officer of Health,

Town Hall, Manchester.

DEPARTMENT OF MEAT INSPECTION.

City Abattoirs,
Manchester,
January 31st, 1903.

Dr. Niven,
Medical Officer of Health,
Town Hall.

Dear Sir,—I have pleasure in submitting the following report with reference to work done, and the amount of unwholesome food seized and destroyed under the Public Health Acts, 1875 and 1890, during the year ending December 31st, 1902 :—

ABATTOIRS AND CARCASE MARKET.

The number of animals slaughtered in the Abattoirs, Water Street, during the 12 months :—

Cattle	Sheep	Lambs	Calves	Pigs
42,380	139,096	46,105	1,107	13,922

The number of carcases exposed for sale in the Dead Meat Market, Water Street :—

		Beast	Sheep	Lambs	Calves	Pigs
Abattoir killed ...		39,381	129,253	44,177	224	519
Imported	Fresh ...	28,106	26,066	560	16,806	5,981
	Chilled & Frozen	10,141	191,400	63,171	—	35,932
Total		77,628	346,719	107,908	17,030	42,432

OFFALS.

Beast, Sheep, and Pig Offals :—

Imported and exposed in the Meat Market	Fresh	869,112lbs.
	Chilled and Frozen	5,003,950lbs.

RUSHOLME ABATTOIRS.

The number of animals slaughtered at the Abattoirs, Monmouth Street, Rusholme :—

Beast	Sheep and Lambs	Calves	Pigs
559	5,278	185	2,249

Private Slaughter-houses.

The amount of slaughtering executed in the private slaughter-houses is approximately estimated in the following figures :—

	Cattle	Sheep and Lambs	Pigs
Beef Butchers	10,254	45,396	500
Pork ,, ...	—	—	20,540

Unsound Food.

The amount of unwholesome food condemned during the year is summarised in the subjoined tables :—

Meat and Fish.

Beef	117,498 lbs.
Mutton	5,471 ,,
Veal	1,761 ,,
Pork	16,212 ,,
(Imported Offals) ...	35,700 ,,
Venison	112 ,,
Total	176,754 lbs.

Fish	48,312 lbs.
Shellfish	31,195 ,,
Total	79,507 lbs.

Game and Rabbits.

Quails	1,477 head
Ortolans	93 ,,
Grouse	43 ,,
Guinea Fowl	26 ,,
Pheasants	16 ,,
Partridge	8 ,,
Wild Ducks	6 ,,
Hares	150 ,,
Rabbits	5,901 ,,

Poultry.

Pigeons	384 head
Turkeys	244 ,,
Chickens	113 ,,
Geese	32 ,,

Fruit.

Black Currants	993 baskets
Cherries	36 sieves 17 boxes
Strawberries	29 boats
Pears	27 cases $16\frac{1}{2}$ sieves
Apples	$10\frac{1}{4}$ barrels
Tomatoes	16 baskets
Bananas..	1 crate

Vegetables.

Onions	$30\frac{1}{4}$ cases
Mushrooms	$39\frac{1}{2}$ pots 27 baskets
Potatoes	9 bags
Raddishes	8 flats
Cress	2 hampers
Cauliflowers...	1 crate
Beans	7 bags

Miscellaneous.

Sardines	112 tins
Salmon	20 ,,
Lobster	19 ,,
Rabbit	23 ,,
Meat	9 ,,
Peas	92 ,,
Tomatoes	23 ,,
Pears	11 ,,
Apricots	9 ,,
Peaches	8 ,,
Pine Apple	5 ,,
Greengages	4 ,,
Fruit	4 ,,
Cocoa Nuts	15 bags
Yeast	8 ,,
Eggs	1 box

Number of Seizures and reasons therefor.

The number of carcases, portions of carcases, and consignments of fish, etc., condemned during the year has been 1,800, and from the following causes :—

Decomposing	1,134	Peritonitis	3
Tuberculosis	355	Diarrhœa	2
Unmarketable	55	Pneumonia	3
Emaciation	35	Actinomycosis	2
Smothered	34	Joint disease	2
Flukes	39	Blood Poison	1
Fevered	22	Septic Poisoning	1
Injured	21	Asphyxiated	1
Inflammation	19	Pericarditis	1
Abscesses	15	Parturient Fever	1
Dropsy	12	Septic Alveolitis	1
Hydatids	9	Nephritis	1
Choked	8	Urticaria	1
Swine Fever	7	Oedema	1
Unseasonable	6	Worried	1
Black quarter	3	Tar tainted	1
Measles	3		

The following table will show where the meat and fish was condemned, and the amounts taken from each place :—

In the Abattoirs and Carcase Market of which 99,135 lbs. was dressed meat consigned from other places than the City.	154,269	lbs.
,, Pig Market	6,047	,,
,, Private Slaughter-houses	5,628	,,
,, Triperies	1,539	,,
,, Cold Air Stores	3,824	,,
,, Shops	1,878	,,
,, Rusholme Abattoirs	37	,,
,, Farms	664	,,
,, Monsall Hospital	224	,,
,, Manchester Workhouse, Crumpsall	96	,,
,, Hawker's Carts	152	,,
,, Railway Stations	10,439	,,
,, Fish Markets	71,464	,,

The game, rabbits, poultry, fruit, vegetables, and miscellaneous:—

At the Fish Market.

Quails	1477	head
Grouse	43	,,
Ortolans	93	,,
Pheasants	16	,,
Partridge	8	,,
Guinea Fowl	26	,,
Wild Ducks	6	,,
Pigeons	384	,,
Turkeys	223	,,
Hares	150	,,
Chickens	88	,,
Rabbits	4,394	,,
Geese	1	,,

At Smithfield Market.

Rabbits	665	head
Black Currants	29	baskets
Strawberries	29	boats
Pears	27	cases
,,	16½	sieves
Cherries	17	boxes
Apples	9	barrels
Onions	29	cases
Mushrooms	39½	pots
Mushrooms	27	baskets
Potatoes	9	bags
Raddishes	8	flats
Cress	2	hampers
Cauliflowers	1	crate
Cocoa Nuts	14	bags
Beans	7	bags

At Railway Stations.

Geese	30	head
Black Currants	964	baskets
Cherries	36	sieves
Yeast	8	bags
Eggs	1	box
Lobster	10	tins
Fruit	4	tins

At Cold Air Stores.

Rabbits	32	head
Chickens	25	,,
Turkeys	21	,,

At the Shops.

Sardines	112	tins
Salmon	20	,,
Lobster	9	,,
Meat	9	,,
Peas	92	,,
Tomatoes	23	,,
Pears	11	,,
Peaches	8	,,
Apricots	9	,,
Pine Apple	5	,,
Greengages	4	,,
Rabbit	23	,,
Cocoa Nuts	1	bag
Geese	1	head

On Hawkers Carts.

Tomatoes	16	baskets
Apples	1¼	barrels
Onions	1¼	case
Bananas	1	crate

With the exception of 913 lbs. of meat, 1,078 lbs. of fish, and 16 tins of preserved foods stuffs, the whole of the above amounts have been surrendered* by the trade after being condemned by the Inspector.

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* The term surrender includes cases in which the Inspector has discovered the diseased meat in the course of his duty.

The Distribution of Inspection.

Abattoirs and Carcase Market.

These establishments are under constant supervision the whole day through. The inspection includes the examination of the animals slaughtered on the premises, and also the imported meat, which is very considerable—comprising Birkenhead and Danish carcases—the chilled and frozen meat, and dressed carcases from the country districts of Cumberland, Lancashire, Cheshire, and Yorkshire.

With regard to the inspection of imported meat,—the most critical part is in the examination of dressed carcases from the country districts, inasmuch as the majority of these carcases are of animals, especially cows, which have been slaughtered on account of being diseased, and it is sometimes extremely difficult to arrive at the true nature of the case when the Inspector has only got the bare carcase to look at, all the internal organs having been destroyed.

Fish Markets and Smithfield Fruit Market.

These markets are visited several times a day, and in the summer months an Inspector is in constant attendance.

On Saturday nights, also, an Inspector is on duty until the market closes.

Private Slaughter-houses.

The number of private slaughter-houses on the register is 84. Two slaughter-houses have been closed—one by the owner, and the other by the Corporation.

There have also been two new slaughter-houses licensed during the past twelve months.

There have been 3,916 visits made to the private slaughter-houses (72 being at the request of the butchers), and 14,059 carcases examined in them. Of these, 52 whole carcases and portions of 14 others were condemned as unfit for human food.

During the summer months, 180 visits were made to private slaughter-houses in the evenings between the hours of 7 p.m. and 10 p.m.

Shops.

There have been 5,829 visits made to the meat, fish, fruit, and provision shops in the poorer districts of the City; of these, 210 were made on Sunday mornings. Special attention has been given to the tinned foodstuffs in the small provision shops, and all suspicious tins purchased by the Inspectors for further examination—9 tins of corned beef and 5 tins of salmon were seized from one shop, and 2 tins of salmon from another; also one shopkeeper in Greenheys reported to have her stock inspected, which resulted in 311 tins of foodstuffs being condemned.

Two orders for the destruction of unsound food have been obtained at the City Police Courts.

Legal proceedings have been instituted against one fishmonger in Strangeways for having in his possession and exposed for sale unsound herrings, and a fine of £2 and costs was imposed.

Triperies.

These places are regularly inspected, which has induced the tripe dressers to notify the Inspectors when they receive consignments of bellies of a doubtful nature. Twenty-six bellies have been condemned on account of tuberculosis.

Railway Stations.

Two hundred and sixty-four visits have been made to the railway stations; these visits are made for two reasons:—

(1) To comply with the requirements of the Animals Transit and General Order, 1895 (of which reference will be in the Diseases of Animals Report).

(2) To ascertain what consignments of meat, beast offals, barrels of salted meat, etc., are arriving in the City, many of which are consigned direct to butchers' shops and warehouses, and do not come to the Abattoirs for inspection.

Sausage and Pie Factories.

A number of visits have been paid to these places, but nothing of an objectionable nature was detected.

Pig Market.

This market is inspected each day, including Sunday, and when sickly or injured pigs are discovered they are ordered to be slaughtered.

Porters Carts and Beef Sheets.

These items receive the attention of the Inspectors, and I regret to say many of these meat carriers are extremely negligent in not keeping their carts and sheets in a thoroughly clean condition.

The Granting of Certificates.

Official certificates are granted (upon request) to all salesmen by the Inspectors for the unwholesome food they condemn.

These certificates are chiefly sought for by the Commission Agents for the purpose of being forwarded to their senders as a guarantee of what has been condemned.

Eleven hundred and three such certficates have been issued during the past twelve months.

Disposal of Unsound Meat, Fish, and Slaughter-house Garbage.

This work is carried out by the Cleansing Department. At Holt Town Depot there is a tank provided for the boiling down of meat, and the fish is dried down in the cylinders. A great part of the diseased meat is burnt in furnaces at the Water Street Depot. The slaughter-house garbage is also disposed of with nightsoil refuse.

The number of seizures and surrenders made during the year has been previously stated to be 1,800, and the causes also enumerated. I may, however, make a few remarks on one or two of these conditions.

Decomposition.

With regard to this condition I may say that the numbers under its heading are chiefly comprised of fish, shellfish, game, poultry, rabbits, beef and pork offals, both English and foreign, and also of fruit and vegetables.

Tuberculosis.

This very troublesome disease may be mentioned as still having a most serious effect upon the meat trade, more especially with regard to cows, and is one on which great conflict of opinion still exists as to its dangerous effect upon meat.

The Local Government Board are, however, anxious that local authorities should not relax any of their vigilance in preventing the sale to the public of tuberculous meat and milk.

The cattle slaughtered at the Abattoirs are principally young heifers and bullocks of the Irish, Welsh, and Norfolk varieties, a very small proportion of cows are killed, and the majority of these are from Ireland or Wales. It cannot therefore be supposed that amongst such naturally reared animals tuberculosis would be very prevalent—that is to say, to such an extent as to lead to the destruction of all or part of their carcases.

There have, however, been 297 seizures made of tuberculous animals slaughtered at the Abattoirs. Of this number, 47 carcases were totally condemned; of the remainder, partial seizure only ensued, affecting in the aggregate 41,340 lbs.

Of the dressed meat consigned from the country districts, 59 carcases were found to be tuberculous; of these, 17 were totally condemned, and from the remaining 42 bodies partial seizure ensued, amounting in all to 13,290 lbs.

In private slaughter-houses, 18 animals were observed to be tuberculous; of these, five carcases were totally condemned, and of the remainder partial seizure only took place, amounting in all to 3,755 lbs.

Swine Fever.

Seven pig carcases have been condemned for this affection, resulting from two outbreaks of this disease within the City, and were slaughtered under the Swine Fever Order.

Parasites.

There are several varieties of parasites which affect the organs of animals, some of which are directly transmissible to man, others are of no great importance.

Three cases of measly pork have been discovered, which gives rise to a common tapeworm in man. The flukeworm is also very common in the livers of sheep and cattle; but while this parasite is not directly transmissible to man, it renders these organs unmarketable.

Fluke disease in man is got from eating vegetables (*i.e*, watercress), and not from meat. Hydatid cysts, Filaria worm, and Psorosperms are also found in the organs of animals.

Inflammatory Diseases.

The carcases condemned under these ailments are imported either alive or dressed to the Abattoirs, chiefly from dairy farmers around Manchester, and from the dairying districts in the counties of Cheshire, Lancashire, and Yorkshire, and, by reasons of emergency, the live animals are floated to these premises at very irregular hours. It is much preferable, however, that farmers should be allowed to send their animals here for slaughter when taken suddenly ill than to dispose of them in a concealed manner so as to escape inspection. Extreme care is taken over the examination of all animals and carcases showing any signs whatever of having been affected with any form of inflammation, as I regard all inflammatory affections as having a most serious effect upon meat for human consumption.

I am,
Your obedient Servant,
ALFRED HOLBURN, M.R.C.V.S.,
Chief Inspector.

CONTAGIOUS DISEASES OF ANIMALS.

During the year there have been five outbreaks of glanders within the City. Five horses were found affected with the disease, which were immediately slaughtered by order of the Local Authority. The post-mortem examinations confirmed the diagnosis.

The total value of the horses affected amounted to £117, and compensation was paid to their owners to the extent of £30

Two outbreaks of swine fever have occurred, and have been dealt with by the Board of Agriculture.

Inspection.

The Pig Market, Water Street, is visited daily by a Veterinary Inspector under the Swine Fever Order, 1894, and all cases of infringements are reported immediately to the Board of Agriculture, or dealt with by the Inspectors.

Railway Stations.

Two hundred and sixty-four visits have been made to the railway stations and cattle docks for the purposes of the Animal Transit and General Order of 1895, more particularly with regard to the cleansing and disinfection of trucks and pens.

Horse Market.

The horse market, which is held once a month in the Haymarket, Tonman Street, Deansgate, is inspected by a Veterinary Inspector as required by the Glander and Farcy Order, 1894.

There have been no cases of glanders detected in this market during the year.

On account of the disease known as Mange in Horses being prevalent, the Local Authority have made application to the Board of Agriculture asking that a Parasitic Mange Order might be issued for this City, giving them power to deal with this disease as a contagious disease.

ALFRED HOLBURN, M.R C.V.S.,
Chief Veterinary Inspector.

TABLES.

TABLE A.—MANCHESTER, 1902.

CAUSES OF DEATH AT DIFFERENT LIFE PERIODS IN THE 53 WEEKS OF THE YEAR.

PERSONS.—(MALES AND FEMALES.)

CAUSES OF DEATH	Ages at Death													
	All Ages	Under 5 Years		5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
		0 to 1	1 to 5											
All Causes	11026	2749	1441	304	162	198	299	701	1008	1246	1355	1026	483	54
A.—GENERAL DISEASES	4,039	1101	728	166	76	86	148	352	430	445	297	174	33	3
B.—LOCAL DISEASES	5,622	1020	621	116	71	101	135	310	520	729	944	707	322	26
C.—OTHER SPECIFIED DIS:	11	3	1	1	...	...	1	...	...	...	1	2	2	...
D.—ILL-DEFINED DISEASES	954	544	43	1	1	...	4	8	9	20	66	119	115	24
E.—VIOLENT DEATHS	400	81	48	20	14	11	11	31	49	52	47	24	11	1
A.—General Diseases.														
Smallpox.. Vaccinated	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not Vaccinated	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No Statement	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cowpox	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chickenpox	3	1	2	...	...	...	...	...	...	...	...	...	...	...
Measles	242	63	165	11	1	...	2	...	...	...	...	...	...	...
Epidemic Rose Rash	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Scarlet Fever	146	5	98	33	5	3	...	2	...	...	...	...	...	...
Typhus	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Plague	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Relapsing Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Influenza	80	3	5	2	2	...	2	8	13	21	12	4	8	...
Whooping Cough	242	119	118	5	...	...	...	...	...	...	...	...	...	...
Mumps	1	1	...	...	...	...	...	...	...	...	...	...	...	...
Diphtheria and Memb: Croup	123	6	75	35	4	...	1	1	1	...	...	...	...	...
Cerebro-spinal Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Simple Cont: Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Enteric Fever	66	1	2	2	6	7	17	15	11	3	2	...	...	...
Asiatic Cholera	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Epidemic Diarrhœa	50	43	5	1	...	...	...	...	1	...	...	...	...	...
Diarrhœa	246	192	39	...	...	1	...	...	...	2	2	8	2	...
Dysentery	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Malarial Fever	2	...	...	...	...	...	...	...	1	...	1	...	...	...
Hydrophobia	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Glanders	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Anthrax	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tetanus	2	1	1	...	...	...	...	...	...	...	...	...	...	...
Syphilis	28	21	1	...	1	...	1	...	2	2	...	...	...	...
Gonorrhœa, Strict: Urethra	11	...	...	...	...	...	1	...	3	...	4	3	...	...
Puerperal.. Septicæmia	10	...	...	...	...	...	3	5	2	...	...	...	...	...
Pyæmia	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phlegmasia Dol:	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fever	7	...	...	...	...	...	2	3	2	...	...	...	...	...
Infective Endocarditis	2	...	...	...	...	...	...	1	...	...	1	...	...	...
Epidemic Pneumonia Pneumonic Fever	2	...	...	...	...	...	...	1	1	...	...	...	...	...
Erysipelas	18	5	1	...	...	1	...	3	2	...	5	1	...	...
Septicæmia (not puerp:)	2	...	...	...	1	...	...	...	...	1	...	...	...	...
Pyæmia (not puerp:)	5	2	1	1	...	...	...	1	...	...	...	...	...	...
Phlegmon	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phagedœna	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other Septic Diseases	5	...	2	2	1	...	..	...	...	...	...	...	...	...
Tubercular Phthisis	493	1	12	13	10	31	52	117	116	85	40	14	2	...
Phthisis	652	2	4	7	17	28	43	137	166	147	73	25	3	...

TABLE A, 1902—*continued.*

CAUSES OF DEATH	All Ages	Ages at Death: Under 5 Years												
		0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
A.—General Diseases— *continued*														
Tubercular Meningitis	141	38	62	27	8	4	1	...	...	1	...	...	...	...
Tubercular Peritonitis	26	7	8	3	...	1	2	4	1	...	...	...	...	...
Tabes Mesenterica	62	45	14	2	...	1	...	...	...	...	...	...	...	...
Lupus	1	...	...	...	...	...	...	...	...	...	...	...	1	...
Tubercle of other organs	46	11	12	2	4	1	6	5	1	2	...	2	...	...
General Tuberculosis	113	30	43	9	3	...	8	7	8	2	3	...	...	...
Scrofula	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Parasitic Diseases	1	1	...	...	...	...	...	...	...	...	...	...	...	...
Starvation	3	...	...	...	...	...	...	...	...	2	1	...	...	...
Scurvy	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Alcoholism, Delirium Tremens	49	...	...	...	...	...	...	8	17	17	5	2	...	...
Opium, Morphia Habit	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ptomaine Poisoning	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Industrial Poisoning: Lead	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Industrial Poisoning: Phosphorus	...	...	...	...	...	...	...	. .	...	...	...	...	...	...
Industrial Poisoning: Arsenic, &c.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rheum: Fever, Acute Rheum:	33	...	2	3	6	3	1	6	4	5	1	2	...	...
Rheumatism of Heart	1	...	...	1	...	...	...	...	...	...	...	...	...	...
Chronic Rheumatism	42	...	...	2	2	...	...	5	3	12	8	9	...	1
Rheum: Arthritis, Rheum: Gout	5	...	...	...	...	...	...	...	...	...	3	2	...	...
Gout	...	...	...	...	...	...	...	...	...	...	...	...	...	..
Carcinoma	200	...	...	...	...	1	...	4	27	63	53	43	9	..
Sarcoma	41	...	...	2	...	1	1	8	8	10	5	4	2	...
"*Cancer*," Malignant Disease	194	...	...	...	1	...	1	5	29	47	59	44	6	2
Rickets	27	5	22	...	...	...	...	...	...	...	...	...	...	...
Purpura	2	...	...	...	...	...	1	...	...	...	1	...	...	...
Hæmophilia, Hæm: Diathesis	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Anæmia, Leucocythæmia	33	1	2	1	1	1	1	2	7	11	5	1	...	..
Diabetes Mellitus	46	...	...	1	1	1	2	4	2	12	13	10	...	..
Premature Birth	364	364	...	...	...	...	...	...	...	...	...	...	...	...
Congenital Defects	83	74	4	1	2	1	...	...	1	...	...	...	...	...
Injury at Birth	2	2	...	...	...	...	...	...	...	...	...	...	...	...
Atelectasis	19	19	...	...	...	...	...	...	...	...	...	...	...	...
Want of Breast Milk	1	1	...	...	...	...	...	...	...	...	...	...	...	...
Teething	65	37	28	...	...	...	...	...	...	...	...	...	...	...
B.—Local Diseases.														
1.-NERVOUS SYSTEM.														
Inflammation of Brain	144	48	51	18	5	5	4	4	3	2	3	...	1	...
Softening of Brain	22	...	...	...	...	...	...	...	1	2	3	12	3	1
General Paraly: of Insane	33	...	...	...	...	...	...	3	11	9	5	4	1	...
Insanity (not puerperal)	106	...	...	...	1	...	...	7	21	24	23	22	7	1
Chorea	1	...	...	...	1	...	...	...	...	...	...	...	...	...
Epilepsy	36	...	3	3	1	4	2	5	7	3	5	2	1	..
Convulsions	169	140	26	2	...	...	...	...	...	...	1	...	...	...
Laryngismus Stridulus	13	9	4	...	...	...	...	...	...	...	...	...	...	...
Locomotor Ataxy	8	...	...	...	...	...	...	...	1	4	1	2	...	...
Dis: of Spinal Cord	40	2	...	1	1	...	1	2	5	9	8	10	1	...
Neuritis	16	...	...	...	...	...	...	1	6	3	6	...	...	...
Brain Tumour	12	...	1	1	1	2	...	1	3	3	...	...	...	...
Nervous System (other Dis :)	24	3	2	2	...	...	...	2	2	4	3	4	2	...
2. DISEASES OF SPECIAL SENSE ORGANS.														
Otitis, Mastoid Disease	19	5	4	...	5	2	1	...	...	1	1	...	...	...
Epistaxis, Nose Disease	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ophthalmia, Eye Disease	1	1	...	...	...	...	...	...	...	...	...	...	...	...

TABLE A, 1902—*continued.*

CAUSES OF DEATH	Ages at Death													
	All Ages	Under 5 Years		5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
		0 to 1	1 to 5											
3. Diseases of Heart.														
Valvular Dis : Endocarditis	225	...	2	4	13	13	11	27	39	42	49	19	6	...
Pericarditis	11	...	...	...	2	...	1	...	2	4	1	1	...	...
Hypertrophy of Heart............	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Angina Pectoris	14	...	...	...	...	...	...	1	3	1	4	3	2	...
Dilatation of Heart	90	...	1	2	...	...	...	5	7	18	28	20	7	2
Fatty Degen : of Heart	19	...	...	...	...	...	...	1	2	4	6	5	...	1
Syncope, Heart Disease.........	631	18	5	3	10	11	10	29	53	88	181	142	72	9
4. Dis: of Blood Vessels.														
Cerebral Hæmorrhage............	215	1	...	..	...	...	3	7	23	48	70	47	15	1
Apoplexy, Hemiplegia............	156	...	...	...	...	...	...	3	12	36	37	55	12	1
Aneurism	21	...	...	...	...	...	...	1	6	4	6	4	...	...
Senile Gangrene	25	...	...	...	...	...	...	...	...	1	5	9	9	1
Embolism, Thrombosis	9	1	...	...	...	1	...	1	2	3	...	...	1	...
Phlebitis..............................	5	...	...	...	...	...	...	2	...	1	1	1	...	...
Varicose Veins	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Blood Vessels (Other Diseases)	14	...	...	...	1	...	...	1	...	1	3	7	1	...
5. Dis : of Respiratory Sys :														
Laryngitis	9	3	4	...	...	...	...	...	1	1	...	...	...	...
Memb: Laryng: (Not Diphth:)	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Croup	7	2	5	...	...	...	...	...	...	...	...	...	...	...
Larynx (Other Dis :)	1	...	...	...	...	...	...	...	...	1	...	...	...	...
Bronchitis	1,090	291	140	8	1	...	7	19	39	105	203	175	97	5
Pneumonia { Lobar...............	146	7	6	5	1	7	9	27	24	28	13	13	5	1
Pneumonia { Broncho...........	487	185	210	18	3	1	1	7	8	15	22	11	5	1
"*Pneumonia*"......................	709	88	93	18	7	24	36	76	92	98	104	49	23	1
Emphysema, Asthma	27	...	...	...	...	...	...	...	5	5	8	5	4	...
Pleurisy	32	1	3	1	1	1	1	1	7	5	6	4	1	...
Fibroid Disease of Lung........	12	...	...	...	...	...	1	1	2	3	4	1	...	...
Respiratory Dis: (Other)	72	19	11	...	2	3	1	...	6	5	10	7	8	...
6. Dis: of Digestive Sys:														
Tonsillitis, Quinsy	4	1	1	2	...	...	...	...	...	...	...	...	...	...
Mouth, Pharynx	10	5	4	1	...	...	...	...	...	...	...	...	...	...
Gastric Ulcer.........................	22	...	...	1	...	2	4	7	3	3	...	2	...	...
Gastric Catarrh......................	29	21	3	2	...	...	...	...	...	...	1	...	2	...
Stomach (Other Dis:)............	93	57	8	4	...	1	1	1	6	2	4	6	3	...
Enteritis..............................	42	27	2	2	...	...	...	5	1	2	1	2	...	...
Gastro-Enteritis.....................	35	21	7	...	...	...	2	...	...	1	2	...	2	...
Appendicitis, Perityph :	18	...	...	3	3	3	4	...	1	1	2	...	1	...
Hernia	29	3	1	...	...	1	...	2	2	6	8	5	1	...
Intestinal Obstruct:...............	30	5	...	...	...	2	3	2	3	5	5	2	3	...
Other Diseases of Intestines ...	8	...	1	...	...	1	...	...	2	2	1	1	...	...
Peritonitis	43	3	...	6	2	4	7	8	7	5	1	...	...	...
Cirrhosis of Liver..................	71	...	...	...	...	1	...	2	21	24	18	4	1	...
Liver and Gall Bladder (O. D.).	45	16	...	1	1	...	1	1	3	9	7	5	1	...
Digestive System (Other Dis:)...	34	16	4	1	...	...	1	1	...	4	3	4	...	...
7. Dis : of Lymphatic and Ductless Glands.														
Spleen, Disease of................	5	...	2	...	...	...	...	...	...	1	2	...	...	...
Lymphat: Syst: (Other Dis:)...	4	...	...	...	...	...	1	1	2	...	...	...	...	...
Thyroid Body (Other Dis:) ...	2	...	...	...	...	1	...	...	1	...	...	...	...	...
Supra Renal Caps: (Dis: of)...	4	...	...	...	...	...	...	...	2	2	...	...	...	...
8. Diseases of Urinary System.														
Nephritis Ac:, Uræmia	83	5	8	5	4	3	6	7	11	14	12	6	2	...
Ch : Bright's Dis : Albumin : ...	192	2	6	...	2	4	5	13	34	55	40	22	8	1
Calculus	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bladder and Prostate Dis : ...	27	...	...	...	...	...	...	...	3	2	7	7	8	...
Urinary Syst : (Other Dis :) ...	18	1	...	...	1	...	...	2	7	3	2	2	...	...

TABLE A, 1902—*concluded.*

CAUSES OF DEATH	Ages at Death													
	All Ages	Under 5 Years		5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
		0 to 1	1 to 5											
9. Diseases of Generative System.														
Ovarian Tumour	10	...	...	...	...	...	...	2	3	2	3	...	...	...
Other Dis : of Ovary	1	...	...	...	...	...	...	...	...	1	...	...	...	...
Uterine Tumour	3	...	...	...	...	...	...	...	1	1	1	...	...	...
Other Dis: of Uterus and Vagina	4	...	...	...	...	...	...	2	2	...	...	...	...	...
Disord : of Menstruation	1	...	...	...	...	...	1	...	...	...	...	...	...	...
Gener: and Mam: Orgs: (other)	9	1	...	...	...	...	...	4	3	...	...	...	1	...
10. Diseases of Pregnancy and Childbirth.														
Abortion, Miscarriage	3	...	...	...	...	...	...	3	...	...	...	...	...	...
Puerperal Mania	2	...	...	...	...	...	...	2	...	...	...	...	...	...
Puerperal Convulsions	4	...	...	...	...	1	2	1	...	...	...	...	...	...
Placenta Præv: Flooding	9	...	...	...	...	...	3	5	1	...	...	...	...	...
Other Ac: of Preg: & Childbirth	12	1	...	...	...	...	2	4	5	...	...	...	...	...
11. Diseases of Locomotor System.														
Caries, Necrosis	11	...	1	2	1	3	1	...	...	1	...	2	...	...
Arthritis, Periostitis	1	...	...	...	...	...	...	...	...	...	1	...	...	...
Locomotor Sys : (Other)	4	1	...	...	1	...	1	...	...	...	1	...	...	...
12. Diseases of the Skin.														
Ulcer, Bedsore	7	1	...	...	...	...	...	...	...	1	...	2	3	...
Eczema	4	4	...	...	...	...	...	...	...	...	...	...	...	...
Pemphigus	5	3	...	...	...	...	...	...	...	1	...	...	1	...
Skin Diseases (other)	13	2	2	...	...	...	1	1	3	...	2	1	1	...
C.—Other Specified Diseases	11	3	1	1	...	...	1	...	...	...	1	2	2	...
D.—Ill-defined and not Specified Diseases.														
Atrophy, Debility	544	473	27	...	...	...	...	...	...	3	10	22	6	3
Old Age	214	...	...	...	...	...	...	...	...	1	20	72	101	20
Dropsy, Ascites, Anasarca	...	..	...	...	...	...	...	...	...	...	...	...	...	...
Tumour	5	1	...	...	...	...	1	...	1	1	1	...	...	...
Abscess	2	1	...	...	...	...	...	...	...	...	...	1	...	...
Hæmorrhage	1	...	...	...	...	...	...	...	...	...	1	...	...	...
Sudden (cause unascertained)	103	37	13	...	1	...	1	6	5	9	15	11	5	...
Other Ill-defined	85	32	3	1	...	...	2	2	3	6	19	13	3	1
E.—Violent Deaths.														
1. Accident.														
In Mines and Quarries	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Vehicles and Horses	34	...	5	1	4	3	...	3	5	3	7	1	2	...
Ships, Boats, Docks (not Drowning)	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Building Operations	2	...	...	...	...	...	...	...	1	...	...	1	...	...
Machinery	8	...	...	...	1	3	2	...	...	...	1	1	...	...
Weapons and Implements	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Burns and Scalds	66	6	32	7	6	1	...	1	1	2	3	5	2	...
Poison, Poisonous Vapours	7	...	1	...	...	...	...	...	4	2	...	...	...	...
Drowning	45	2	3	7	1	1	...	3	10	7	9	2	...	...
Suffocation	84	69	4	1	2	...	1	1	3	...	3	...	...	...
Falls	85	2	3	4	...	1	4	13	10	18	11	11	7	1
Weather Agencies	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Otherwise or not Stated	7	...	...	...	...	...	...	2	2	2	...	1	...	...
2. Homicide.	9	2	...	...	...	...	...	2	1	3	...	1	...	...
3. Suicide.	53	...	...	..	...	2	4	6	12	15	13	1	...	...
4. Execution.	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TABLE B.—MANCHESTER, 1902.

Causes of Deaths at Different Life Periods—MALES.

Classes	CAUSES OF DEATH	All Ages Total	Under 5 Years		Ages at Death—in years										
			0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
	All Causes	5749	1507	742	141	73	106	144	372	551	691	717	492	194	19
	Smallpox	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Measles	131	38	87	4	1	..	1	...	...	...	...	...	...	...
	Scarlet Fever	67	3	47	15	1	1	...	...	...	...	...	...	...	...
	Typhus Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Whooping Cough	115	63	51	1	...	...	...	...	...	...	...	...	...	...
	Diphtheria, Memb: Croup	61	4	38	16	1	...	1	...	1	...	...	...	...	...
	Ill-defined Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Enteric Fever	41	...	...	...	2	7	14	9	7	2	...	...	...	...
	Influenza	49	2	5	1	1	...	2	5	8	13	8	3	1	...
	Epidemic Diarrhœa	24	21	2	...	...	...	...	...	1	...	...	...	...	...
	Diarrhœa, Dysen., Simple Chol.	113	87	21	...	...	1	...	...	...	2	...	1	1	...
	Venereal Affections	23	10	1	...	...	...	...	...	5	...	4	3	...	...
	Erysipelas	9	1	1	...	...	1	...	...	1	...	5	...	...	...
	Pyæmia, Septicæmia	7	2	2	1	1	...	...	...	...	1	...	...	...	. .
	Puerperal Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
A	Other Zymotics	6	1	1	...	...	...	...	2	...	...	2	...	...	...
	Tuberc. Periton: Tabes Mes:	48	28	13	3	..	1	1	2	...	...	...	...	...	...
	Tubercular Meningitis	74	22	33	14	3	2	...	...	...	...	...	...	...	...
	Phthisis	692	1	5	9	15	25	46	149	164	171	77	26	4	...
	Tuberculous Dis. (other)	86	25	31	6	3	...	5	8	3	1	3	...	1	...
	Parasitic Diseases	...	...	...	...	..	...	...	...	...	...	...	...	...	...
	Alcoholism	32	...	...	...	...	...	...	6	11	11	3	1	...	...
	Rheumatic Fever	17	...	1	3	2	1	...	4	2	2	1	1	...	...
	Cancer	185	...	...	1	1	...	1	5	27	43	55	45	6	1
	Premature Birth	211	211	...	...	...	...	...	...	...	...	...	...	...	...
	Congenital Defects	56	52	1	...	2	...	...	...	1	...	...	...	...	...
	Epilepsy	17	...	2	2	1	2	1	2	2	1	2	1	1	...
	Convulsions	89	76	11	1	...	...	...	...	...	...	1	...	...	...
	Nervous Syst: (other)	220	40	29	6	2	4	3	10	29	40	21	28	7	1
	Cereb: Haem: Apoplexy, Hemip:	161	1	...	...	...	...	2	6	17	36	42	44	11	2
	Heart and Blood Vessel Dis:	498	9	4	6	11	13	8	30	55	76	134	107	41	4
	Croup	4	2	2	...	...	...	...	...	...	...	...	...	...	...
B and C	Bronchitis	561	176	72	4	1	...	3	13	23	50	105	75	36	3
	Pneumonia	766	138	170	18	3	21	25	69	85	97	87	39	14	...
	Respiratory Dis: (other)	92	11	16	1	2	2	2	1	16	10	16	8	7	...
	Digestive Syst: (other)	247	95	15	11	2	7	11	9	23	29	27	14	4	...
	Urinary Syst: (other)	173	5	8	2	3	5	4	8	26	42	42	19	9	...
	Generative Organs	2	1	...	...	...	...	...	...	...	...	...	...	1	...
	Other specified Diseases	163	39	32	3	6	5	3	8	10	19	20	14	4	...
	Marasmus and Atrophy	297	261	13	...	...	...	..	...	...	1	5	14	3	...
D	Old Age	73	...	...	...	...	...	...	...	...	...	8	23	35	7
	Other Ill-defined Causes	103	41	4	1	1	...	2	3	4	9	20	13	5	...
E	Violence	236	41	24	12	8	8	9	23	30	35	29	13	3	1

TABLE C.—MANCHESTER, 1902.

Causes of Deaths at Different Life Periods—FEMALES.

Classes	CAUSES OF DEATH	All Ages Total	Ages at Death—in years: Under 5 Years: 0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
	All Causes	5277	1242	699	163	89	92	155	329	457	555	638	534	289	35
A	Smallpox	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Measles...................................	111	25	78	7	...	...	1	...	...	...	...	...	...	...
	Scarlet Fever	79	2	51	18	4	2	...	2	...	...	...	...	...	...
	Typhus Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Whooping Cough	127	56	67	4	...	...	...	...	...	...	...	...	...	...
	Diphtheria, Memb: Croup	62	2	37	19	3	...	...	1	...	...	...	...	...	...
	Ill-defined Fever.........................	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Enteric Fever	25	1	2	2	4	...	3	6	4	1	2	...	...	...
	Influenza	31	1	...	1	1	...	...	3	5	8	4	1	7	...
	Epidemic Diarrhœa	26	22	3	1	...	...	...	...	...	...	...	...	...	...
	Diarrhœa, Dysentery, Simple Cholera	133	105	18	...	...	...	...	...	...	...	2	7	1	...
	Venereal Affections.................	16	11	...	...	1	...	2	...	...	2	...	...	...	...
	Erysipelas................................	9	4	...	...	...	...	...	3	1	...	...	1	...	...
	Pyæmia, Septicæmia	5	...	1	2	1	...	...	1	...	...	...	...	...	...
	Puerperal Fever	17	...	...	...	...	...	5	8	4	...	...	...	...	...
	Other Zymotics	4	1	1	...	...	...	...	...	2	...	...	...	...	...
	Tubercular Periton : Tabes Mes.	40	24	9	2	...	1	1	2	1	...	...	...	...	...
	Tubercular Meningitis	67	16	29	13	5	2	1	...	...	1	...	...	...	...
	Phthisis...................	453	2	11	11	12	34	49	105	118	61	36	13	1	...
	Tuberculous Diseases (other) ...	74	16	24	5	4	1	9	4	6	3	...	2	...	...
	Parasitic Diseases	1	1	...	...	...	...	...	...	...	...	...	...	...	...
	Alcoholism	17	...	...	...	...	...	...	2	6	6	2	1	...	...
	Rheumatic Fever	16	...	1	...	4	2	1	2	2	3	...	1	...	...
	Cancer	250	...	...	1	...	2	1	12	37	77	62	46	11	1
	Premature Birth	153	153	...	...	...	...	...	...	...	...	...	...	...	...
	Congenital defects	49	44	3	1	...	1	...	...	...	...	...	...	...	...
B and C	Epilepsy	19	...	1	1	...	2	1	3	5	2	3	1	...	...
	Convulsions	80	64	15	1	...	...	...	...	...	...	...	...	...	...
	Nervous System (other)	199	22	29	16	7	3	2	10	24	20	31	26	8	1
	Cerebral Hemorrhage, Apoplexy, and Hemiplegia	210	...	...	...	...	...	1	4	18	48	65	58	16	...
	Heart and Blood Vessel Diseases	566	10	4	3	15	12	14	38	59	91	150	104	57	9
	Croup	3	...	3	...	...	...	...	...	...	...	...	...	...	...
	Bronchitis	529	115	68	4	...	...	4	6	16	55	98	100	61	2
	Pneumonia	576	142	139	23	8	11	21	41	39	44	52	34	19	3
	Respiratory Diseases (other)......	61	12	2	...	1	2	1	1	5	10	12	9	6	...
	Digestive System (other)	266	80	16	12	4	8	12	20	26	35	26	17	10	...
	Urinary System (other)............	147	3	6	3	4	2	7	14	29	32	19	18	9	1
	Generative Organs and Childbirth	56	1	...	...	...	1	8	23	15	4	4	...	...	...
	Other specified Diseases	155	25	31	5	5	3	7	5	11	25	19	15	3	1
D	Marasmus and Atrophy............	247	212	14	...	...	...	...	...	...	2	5	8	3	3
	Old Age	141	...	...	...	...	...	...	...	...	1	12	49	66	13
	Other Ill-defined Causes	93	30	12	...	...	...	2	5	5	7	16	12	3	1
E	Violence	164	40	24	8	6	3	2	8	19	17	18	11	8	...

TABLE D.

CITY OF MANCHESTER, 1902.—CAUSES OF DEATH IN INFANCY AND CHILDHOOD.

CAUSES OF DEATH	UNDER ONE YEAR			Total under One Year	ONE AND UNDER FIVE YEARS				Total under Five Years
	Under 3 months	3–6 months	6–12 months		1–	2–	3–	4–	
All Causes	**1,334**	**585**	**830**	**2,749**	**737**	**315**	**220**	**169**	**4,190**
Measles	1	1	61	63	91	37	26	11	228
Scarlatina	...	...	5	5	13	33	22	30	103
Whooping Cough	17	29	73	119	60	32	20	6	237
Diphtheria (Memb : Croup)	...	...	6	6	12	16	25	22	81
Fever (various forms)	...	1	...	1	...	1	...	1	3
Diarrhœal Diseases	55	84	96	235	32	8	1	3	279
Syphilis	11	9	1	21	1	...	...	...	22
Tabes Mesenterica	14	17	21	52	10	7	3	2	74
Hydrocephalus	7	9	22	38	26	13	11	12	100
Scrofula (other)	10	17	17	44	27	13	11	20	115
Premature Birth	358	6	...	364	...	...	...	...	364
Teething	...	7	30	37	27	1	...	...	65
Convulsions	78	27	35	140	18	5	1	2	166
Brain Diseases (other)	10	21	31	62	35	10	8	8	123
Lung Diseases	159	140	297	596	287	98	57	30	1,068
Atrophy, Marasmus	315	109	49	473	23	3	1	...	500
Found Dead in Bed	58	20	7	85	2	1	...	...	*88
Suffocation	6	2	...	8	1	...	1	...	10
Violence (other forms)	5	4	3	12	8	11	15	10	56
Ill-defined Causes	24	8	15	47	10	4	1	...	62
Unclassified	206	74	61	341	54	22	17	12	446

* 61 of these were "Found dead in bed, suffocated."

(a) from all causes, and (b) from specified causes; also the percentages to total deaths of Inquest Cases, and of Deaths in Public Institutions.

Years	Estimated Populations (Mean)	Persons Married	Annual Rates per 1,000 Persons living													Percentages to Total Deaths		Years
			Births	Deaths (All Causes)	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Typhus Fever	Enteric Fever	Simple Continued Fever	Diarrhœa and Dysentery	English Cholera	Violence	Inquest Cases	Deaths in Public Institutions	
Quinquennial Averages 1871–1875	477,344	24·6	38·9	28·3	0·26	0·64	1·08	0·08	0·78	0·14	0·43	0·21	1·92	0·03	0·94	7·2	13·4	Quinquennial Averages 1871–1875
1876–1880	509,802	18·6	38·7	26·2	0·24	0·53	1·07	0·13	0·84	0·08	0·29	0·11	1·22	0·04	0·89	7·5	14·3	1876–1880
1881–1885	542,746	17·9	35·1	23·6	0·04	0·71	0·48	0·10	0·68	0·05	0·20	0·03	0·96	0·03	0·72	7·0	15·9	1881–1885
1886–1890	575,630	16·6	33·4	24·6	0·02	0·83	0·50	0·32	0·54	0·02	0·30	0·01	1·06	0·02	0·78	6·9	17·7	1886–1890
1891–1895	517,801	16·9	33·2	23·6	0·03	0·62	0·26	0·27	0·64	0·00	0·24	0·01	1·14	0·05	0·77	7·1	19·2	1891–1895
1896–1900	539,599	18·2	32·5	22·7	...	0·89	0·20	0·13	0·53	0·00	0·18	0·01	1·65	0·04	0·73	7·1	20·2	1896–1900
Avge. 30 yrs. 1871–1900	527,154	18·8	35·3	24·8	0·10	0·70	0·60	0·17	0·67	0·05	0·27	0·06	1·32	0·03	0·80	7·1	16·8	1871–1900 Avge. 30 yrs.
1871	464,866	24·2	38·1	29·3	0·72	0·84	0·71	0·04	0·61	0·20	0·45	0·35	2·58	0·02	0·90	6·3	13·7	1871
1872	471,023	25·8	39·3	27·3	0·32	0·33	1·02	0·09	1·22	0·17	0·40	0·17	2·07	0·04	0·90	6·9	13·5	1872
1873*	477,261	24·8	38·3	28·0	0·08	0·85	1·43	0·05	0·38	0·15	0·46	0·20	1·92	0·05	0·83	7·3	12·8	1873*
1874	483,582	23·8	39·3	28·7	0·05	0·62	1·33	0·07	0·83	0·08	0·39	0·19	1·71	0·01	0·94	7·3	13·5	1874
1875	489,987	24·2	39·5	28·4	0·11	0·54	0·92	0·14	0·88	0·11	0·44	0·12	1·32	0·01	1·12	8·4	13·3	1875
1876	496,476	20·2	40·0	28·0	0·80	0·65	1·13	0·10	0·81	0·16	0·42	0·17	1·50	0·02	1·05	7·4	14·4	1876
1877	503,051	19·8	39·5	26·1	0·36	0·59	1·05	0·13	0·84	0·11	0·29	0·12	0·82	0·01	0·86	7·9	14·9	1877
1878	509,714	18·8	39·7	26·8	0·01	0·45	1·07	0·14	0·68	0·06	0·31	0·10	1·42	0·07	0·91	7·6	14·4	1878
1879*	516,464	16·8	37·3	25·2	0·00	0·35	1·07	0·13	1·09	0·02	0·18	0·07	0·62	0·01	0·81	7·3	14·2	1879*
1880	523,304	17·2	36·9	25·0	0·01	0·63	1·03	0·14	0·76	0·04	0·26	0·07	1·73	0·09	0·80	7·1	13·7	1880
1881	530,051	17·8	35·9	22·8	0·03	0·29	0·34	0·09	0·71	0·03	0·17	0·06	0·73	0·02	0·84	8·1	15·9	1881
1882	536,324	18·8	35·7	24·0	0·05	0·89	0·34	0·11	0·87	0·10	0·25	0·04	1·00	0·03	0·67	7·2	14·5	1882

TABLE E—*Continued.*

Years	Estimated Populations (Mean)	Persons Married	Annual Rates per 1,000 Persons living													Percentages to Total Deaths		Years
			Births	Deaths (All Causes)	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Typhus Fever	Enteric Fever	Simple Continued Fever	Diarrhœa and Dysentery	English Cholera	Violence	Inquest Cases	Deaths in Public Institutions	
1883	542,671	17·8	34·9	24·4	0·01	0·71	0·81	0·11	0·62	0·05	0·20	0·03	0·95	0·03	0·73	7·0	15·5	1883
1884*	549,093	18·0	34·4	23·4	0·01	0·57	0·74	0·08	0·49	0·03	0·19	0·03	1·46	0·05	0·65	6·2	17·3	1884*
1885	555,591	17·0	34·8	23·6	0·08	1·08	0·17	0·10	0·71	0·04	0·17	0·01	0·64	0·02	0·69	6·4	16·4	1885
1886	562,166	16·4	34·7	24·1	0·00	0·27	0·41	0·15	0·57	0·03	0·29	0·01	1·34	0·04	0·71	7·2	17·0	1886
1887	568,819	16·6	33·9	25·4	0·01	1·54	0·63	0·23	0·50	0·02	0·31	0·01	1·19	0·02	0·77	6·9	16·1	1887
1888	575,550	16·0	33·3	23·3	0·07	0·27	0·42	0·36	0·79	0·02	0·33	0·02	0·71	0·01	0·74	6·7	18·3	1888
1889	582,362	17·0	33·1	24·2	0·00	1·22	0·45	0·51	0·45	0·01	0·31	0·01	1·00	0·03	0·89	6·5	18·2	1889
1890*	589,253	17·0	31·8	26·2	...	0·83	0·60	0·36	0·37	0·01	0·27	0·02	1·04	0·02	0·79	7·0	19·1	1890*
1891†	‡ 508,673	17·2	33·8	26·0	...	0·43	0·22	0·25	1·02	0·01	0·37	0·01	0·81	0·04	0·79	6·8	18·4	1891†
1892†	‡ 513,196	17·2	33·4	23·2	0·00	0·72	0·27	0·25	0·72	0·00	0·24	0·01	0·79	0·02	0·77	7·4	18·2	1892†
1893†	‡ 517,760	16·0	33·4	24·3	0·09	0·57	0·27	0·35	0·46	0·00	0·25	0·01	1·75	0·10	0·76	6·9	18·7	1893†
1894†	‡ 522,365	16·8	31·8	19·8	0·04	0·42	0·22	0·29	0·55	...	0·17	0·01	0·70	0·02	0·75	7·5	21·3	1894†
1895†	‡ 527,010	17·4	33·4	24·5	0·00	0·96	0·33	0·21	0·47	...	0·18	0·01	1·66	0·06	0·80	6·9	19·2	1895†
1896†*	‡ 531,697	18·3	32·8	22·0	...	1·05	0·37	0·15	0·66	0·00	0·22	0·01	1·04	0·02	0·71	7·4	19·7	1896†*
1897†	‡ 536,426	17·8	32·9	22·4	...	1·17	0·23	0·08	0·56	0·00	0·18	0·00	1·74	0·06	0·68	6·6	20·0	1897†
1898†	‡ 541,296	18·3	32·3	21·2	...	0·50	0·12	0·09	0·31	...	0·22	0·01	1·96	0·06	0·69	7·0	19·5	1898†
1899†	‡ 546,010	18·4	32·2	23·9	...	1·28	0·08	0·16	0·42	0·00	0·13	0·01	2·02	0·03	0·78	7·0	19·7	1899†
1900†	‡ 542,566	18·0	32·4	23·8	...	0·47	0·19	0·19	0·68	...	0·14	0·01	1·49	0·03	0·78	7·4	21·9	1900†
1901†	‡ 546,408	17·6	28·7	21·6	...	0·53	0·23	0·24	0·41	0·02	0·14	0·00	1·86		0·78	7·9	23·2	1901†
1902†*	‡ 550,355	18·1	33·0	20·0	...	0·44	0·27	0·22	0·44	...	0·12	...	0·54		0·73	7·6	23·8	1902†

* The facts for these years are for 53 instead of 52 weeks; corrections have, therefore, been made in calculating the rates.

† The populations and rates for the years subsequent to 1890, except the marriage rates, relate to the City of Manchester as enlarged by the Act of that year. The facts and rates for previous years are those for the three Unions of Manchester, Chorlton, and Prestwich, which have been taken to approximately represent "Manchester."

‡ These figures include a proportion of the inmates of certain Extra-municipal Institutions which receive patients from the City of Manchester, and are therefore in excess of the estimates of the Registrar-General.

NOTE.—The population for [illegible] is based on the Census figures of [illegible] and [illegible]

TABLE F, 1881 TO 1902.—MANCHESTER.

ANNUAL RATES OF MORTALITY FROM CERTAIN CAUSES OF DEATH.

	Year	Annual Rates per 1,000 Persons living										Rates per 1,000 Births	
		Cancer	Tabes Mesenterica	Phthisis	Other Tuber: Diseases	Diseases of Nervous System	Diseases of Circulatory System	Diseases of Respiratory System	Diseases of Digestive System	Diseases of Urinary System	Diseases of Generative System	Puerperal Fever	Childbirth
Quinquennial Periods	1881–1885	0·50	0·35	2·42	0·57	3·28	1·37	5·41	1·23	0·48	0·08	3·03	1·99
	1886–1890	0·64	0·36	2·24	0·59	3·09	1·73	5·76	1·23	0·61	0·08	3·22	2·13
	1891–1895	0·62	0·22	2·09	0·75	1·74	2·53	5·56	1·07	0·52	0·07	2·75	3·42
	1896–1900	0·73	0·19	2·04	0·63	1·32	2·54	5·03	1·04	0·49	0·09	1·55	1·51
Average 20 years	1881–1900	0·62	0·28	2·20	0·64	2·36	2·04	5·44	1·14	0·43	0·08	2·64	2·26
	1881	0·48	0·28	2·46	0·52	3·33	1·19	5·57	1·24	0·39	0·07	3·15	1·37
	1882	0·44	0·40	2·41	0·61	3·35	1·34	5·33	1·19	0·45	0·08	3·92	1·62
	1883	0·54	0·34	2·54	0·59	3·32	1·33	5·66	1·20	0·50	0·06	2·27	1·58
	1884*	0·51	0·39	2·34	0·56	3·27	1·44	4·88	1·23	0·59	0·10	2·81	2·55
	1885	0·51	0·36	2·34	0·56	3·12	1·53	5·59	1·28	0·49	0·08	3·05	2·84
	1886	0·56	0·43	2·44	0·59	3·30	1·53	5·43	1·26	0·57	0·08	2·67	1·85
	1887	0·62	0·39	2·19	0·53	3·17	1·66	5·72	1·23	0·53	0·08	3·58	1·35
	1888	0·65	0·31	2·14	0·62	3·19	1·72	5·31	1·16	0·62	0·10	4·12	1·77
	1889	0·70	0·36	2·12	0·59	2·94	1·79	5·06	1·28	0·64	0·08	3·06	1·87
	1890*	0·65	0·33	2·33	0·62	2·87	1·93	7·28	1·22	0·66	0·08	2·68	3·89
	1891†	0·63	0·25	2·20	0·78	2·30	2·69	6·77	1·03	0·55	0·07	3·08	4·01
	1892†	0·61	0·21	2·05	0·75	1·70	2·59	5·44	1·14	0·53	0·05	3·79	4·54
	1893†	0·59	0·26	2·05	0·76	1·70	2·48	5·53	1·20	0·53	0·07	3·70	3·94
	1894†	0·66	0·18	1·97	0·67	1·48	2·31	4·35	0·96	0·49	0·04	1·93	2·77
	1895†	0·63	0·22	2·16	0·77	1·51	2·60	5·73	1·04	0·49	0·11	1·25	1·82
	*1896†	0·66	0·13	2·00	0·60	1·33	2·53	5·19	1·04	0·46	0·11	0·96	1·47
	1897†	0·74	0·22	2·12	0·67	1·35	2·45	4·51	1·03	0·51	0·10	2·10	1·36
	1898†	0·73	0·19	1·95	0·67	1·22	2·15	4·27	1·00	0·54	0·09	1·72	1·54
	1899†	0·75	0·24	2·05	0·61	1·34	2·73	5·47	0·99	0·47	0·10	1·37	1·54
	1900†	0·76	0·17	2·09	0·60	1·37	2·82	5·78	1·15	0·48	0·05	1·59	1·65
	1901†	0·78	0·20	2·09	0·83	1·22	2·55	4·48	1·00	0·49	0·03	2·17	1·72
	*1902†	0·79	0·16	2·08	0·55	1·13	2·61	4·71	0·93	0·58	0·11	0·94	1·65

* The facts for these years are for 53 instead of 52 weeks; corrections have therefore been made in calculating the rates.

† The rates of mortality for the years subsequent to 1890 refer to the City of Manchester as enlarged by the Act of that year. The rates for 1890 and for previous years are those for the three Unions of Manchester, Chorlton, and Prestwich, which have been taken to approximately represent "Manchester."

TABLE G, 1902.—POPULATION, AREA, DENSITY. TOTAL BIRTHS AND DEATHS, WITH BIRTH AND DEATH RATES.

[INSTITUTION POPULATIONS, BIRTHS AND DEATHS, DISTRIBUTED.]

	STATISTICAL DIVISIONS	Estimated Population	Area in Acres	Persons to an Acre	BIRTHS		DEATHS	
					Total	Rate per 1,000	Total	Rate per 1,000
	City of Manchester	**550,355**	**12,910**	**43**	**18,152**	**32·98**	**11,026**	**20·03**
I.	Manchester Township..	133,590	1,646	81	4,582	34·30	3,357	25·13
II.	North Manchester	171,925	7,321	23	5,691	33·94	2,888	17·22
III.	South Manchester	244,840	3,943	63	7,879	31·63	4,781	19·19
I.	Ancoats	44,731	400	112	1,641	36·69	1,130	25·26
	Central	29,280	748	39	866	29·58	783	26·74
	St. George's..............	59,579	498	120	2,075	34·83	1,444	24·24
II.	Cheetham	38,000	919	41	1,280	33·68	484	12·74
	Crumpsall	8,955	733	12	202	22·56	117	13·07
	Blackley	9,028	1,840	5	252	27·91	149	16·50
	Harpurhey	16,831	193	87	566	33·63	286	16·99
	Moston	13,165	1,297	10	426	32·36	176	13·37
	Newton Heath	41,046	1,350	27	1,220	33·15	731	19·86
	Bradford	24,046	288	83	986	41·00	525	21·83
	Beswick	11,840	96	123	436	36·82	247	20·86
	Clayton	9,014	605	15	323	35·83	173	19·19
III.	Ardwick	42,039	509	83	1,479	35·18	805	19·15
	Openshaw	27,627	581	48	987	35·73	513	18·57
	West Gorton	29,889	318	94	993	33·22	505	16·90
	Rusholme and Kirk. ...	20,841	1,412	18	690	27·51	415	16·55
	Chorlton-upon-Medlock	57,685	646	89	1,402	24·30	1,074	18·62
	Hulme.....................	66,759	477	140	2,328	34·87	1,469	22·00

NOTE.—Calculated on the Census of 1891 and 1901.

TABLE H, 1902.

Births Registered in the City of Manchester, in its Main Divisions and in Districts; Distinguishing Legitimate and Illegitimate Births; also the Proportion of Mortality among Infants of both Classes under One Year of Age.

	STATISTICAL DIVISIONS	BIRTHS		Percentage of Illegitimate Births to Total Births	Deaths under 1 Year		Proportion of Deaths under 1 Year Per 1,000 Births		
		Total	Illegitimate		Total	Of Illegitimate Children	Total	Legitimate	Illegitimate
	City of Manchester......	**18,152**	**725**	**4·0**	**2,749**	**191**	**151**	**147**	**263**
	I. Manchester Township	4,582	203	4·4	771	63	168	162	310
	II. North Manchester... ..	5,691	136	2·4	793	30	139	137	221
	III. South Manchester	7,879	386	4·9	1,185	98	150	145	254
I.	Ancoats	1,641	66	4·0	292	22	178	171	333
	Central	866	54	6·2	120	12	139	133	222
	St. George's	2,075	83	4·0	359	29	173	166	349
II.	Cheetham	1,280	27	2·1	124	7	97	93	259
	Crumpsall	202	8	4·0	21	2	104	98	250
	Blackley..............	252	8	3·2	30	..	119	123	...
	Harpurhey............	566	15	2·7	83	6	147	140	400
	Moston	426	10	2·3	59	1	138	139	100
	Newton Heath	1,220	33	2·7	184	6	151	150	182
	Bradford	986	22	2·2	163	4	165	165	182
	Beswick	436	1	0·2	73	1	167	166	1000
	Clayton	323	12	3·7	56	3	173	170	250
III.	Ardwick	1,479	74	5·0	233	18	158	153	243
	Openshaw	987	23	2·3	157	5	159	158	217
	Gorton (West)	993	50	5·0	147	17	148	138	340
	Rusholme and Kirk.	690	25	3·6	83	11	120	108	440
	Chorlton-on-Medlock	1,402	107	7·6	193	21	138	133	196
	Hulme	2,328	107	4·6	372	26	160	156	243

TABLE J, 1902.

INFANTILE MORTALITY IN THE CITY, AND ITS THREE MAIN DIVISIONS.

DEATH-RATES UNDER ONE YEAR PER 1,000 BIRTHS.

CAUSES OF DEATH	City of Manchester	Manchester Township	North Manchester	South Manchester
All Causes	151·44	168·27	139·34	150·40
Measles	3·47	3·27	5·10	2·41
Whooping Cough	6·56	8·08	5·27	6·60
Other Com: Infectious Diseases†	0·66	0·87	0·70	0·51
Diarrhœal Diseases	12·95	16·59	10·72	12·44
Tubercular Diseases‡	7·38	7·64	3·51	10·03
Convulsions	7·71	6·33	7·56	8·63
Other Nervous Diseases§	3·42	4·15	4·22	2·41
Lung Diseases	32·83	35·14	32·68	31·60
Wasting Diseases ‖	46·11	55·22	39·89	45·31
Suffocation	0·44	0·87	0·53	0·13
Found dead in bed	4·68	5·67	3·16	5·20

† These are Smallpox, Scarlatina, Diphtheria, Membranous Croup, and various forms of "Fever," including the chief forms of Typhus and Typhoid.

‡ These are Phthisis, Tubercular Meningitis (Hydrocephalus), Tabes Mesenterica, and General Tuberculosis (Scrofula).

§ These are Meningitis, and other diseases of the Brain and Spinal Cord.

‖ These are Premature Birth, and such ill-defined causes as Atrophy, Marasmus, Debility, Inanition, &c.

TABLE K, 1902.—CITY OF MANCHESTER. ANNUAL RATES OF MORTALITY PER 1,000 PERSONS LIVING AT ALL AGES, IN THE CITY OF MANCHESTER AND IN ITS STATISTICAL DIVISIONS, FROM CERTAIN DISEASES AND GROUPS OF DISEASES.

CAUSES OF DEATH	City of Manchester	Manchester Township	North Manchester	South Manchester	City of Manchester Average of 10 years 1892-1901
All Causes	20·03	25.13	17·22	19·19	22·66
Smallpox	...	...	...	...	0·01
Measles	0·44	0·44	0·67	0·29	0·77
Scarlet Fever	0·27	0·21	0·31	0·26	0·23
Typhus Fever	...	...	...	...	0·00
Influenza	0·15	0·10	0·16	0·16	0·24
Whooping Cough	0·44	0·55	0·42	0·39	0·52
Diphtheria, and Memb: Croup	0·22	0·19	0·21	0·25	0·20
Ill-defined Fever..................	...	...	...	...	0·01
Enteric Fever	0·12	0·12	0·11	0·12	0·19
Diarrhœal Diseases	0·54	0·73	0·44	0·50	1·53
Puerperal Fever	0·03	0·02	0·01	0·05	0·07
Erysipelas	0·03	0·02	0·02	0·04	0·05
Pyæmia, Septicæmia	0·02	0·01	0·04	0·02	0·02
Phthisis (Tuberc: Pulmon:) ...	2·08	3·54	1·29	1·83	2·05
Tubercular Meningitis..........	0·26	0·32	0·17	0·28	0·27
Tuberc: Periton: Tabes Mes:..	0·16	0·20	0·10	0·18	0·20
Tuberculous Dis: (other)	0·29	0·37	0·20	0·31	0·39
Alcoholism	0·09	0·11	0·04	0·11	0·12
Cancer	0·79	0·76	0·78	0·82	0·69
Rheumatic Fever	0·06	0·07	0·07	0·05	0·07
Premature Birth	0·66	0·80	0·55	0·66	0·61
Nervous Diseases	1·13	1·31	1·03	1·11	1·42
Heart and Blood Vessels Diseases	2·61	3·08	2·24	2·60	2·52
Bronchitis	1·98	2·49	1·75	1·87	2·29
Pneumonia	2·44	3·56	2·12	2·06	2·45
Respiratory Diseases (other) ...	0·29	0·25	0·26	0·33	0·34
Digestive Organs (Diseases of)	0·93	1·05	0·70	1·03	1·06
Urinary Organs (Diseases of)	0·58	0·58	0·45	0·67	0·50
Old Age	0·39	0·40	0·35	0·41	0·44

TABLE L, 1902.

MANCHESTER.—Certification of the Causes of Death in the Main Divisions and in Districts.

STATISTICAL DIVISIONS.	Total Deaths	Certified by		Not Certified	Proportion per cent. of Deaths		
					Certified by		Not Certified
		Registered Medical Practitioners	Coroner		Regist'd Medical Prac-titioners	Coroner	
City of Manchester	11,026	10,104	838	84	91·6	7·6	0·8
I. Manchester Township...	3,357	3,019	296	42	89·9	8·8	1·3
II. North Manchester	2,888	2,691	183	14	93·2	6·3	0·5
III. South Manchester	4,781	4,394	359	28	91·9	7·5	0·6
I. Ancoats	1,130	1,029	82	19	91·0	7·3	1·7
Central	783	673	98	12	86·0	12·5	1·5
St. George's	1,444	1,317	116	11	91·2	8·0	1·8
II. Cheetham	484	435	47	2	89·9	9·7	0·4
Crumpsall	117	111	6	...	94·9	5·1	...
Blackley	149	145	4	...	97·3	2·7	...
Harpurhey	286	273	12	1	95·5	4·2	0·3
Moston	176	166	7	3	94·3	4·0	1·7
Newton Heath	731	670	56	5	91·6	7·7	0·7
Bradford	525	494	28	3	94·1	5·3	0·6
Beswick	247	234	13	...	94·7	5·3	...
Clayton	173	163	10	...	94·2	5·8	...
III. Ardwick	805	746	56	3	92·8	6·9	0·3
Openshaw	513	475	35	3	92·6	6·8	0·6
Gorton (West)	505	458	43	4	90·7	8·5	0·8
Rusholme and Kirk. ...	415	378	34	3	91·1	8·2	0·7
Chorlton-upon-Medlock	1,074	992	73	9	92·4	6·8	0·8
Hulme	1,469	1,345	118	6	91·6	8·0	0·4

TABLE M, 1902—CITY OF MANCHESTER.—ANNUAL RATES OF MORTALITY AT SIX GROUPS OF AGES,* PER 1,000 LIVING AT THOSE AGE GROUPS, FROM CERTAIN PREVALENT DISEASES, AND GROUPS OF DISEASES.

CAUSES OF DEATH		Under 5 Years	5 to 15 Years	15 to 25 Years	25 to 45 Years	45 to 65 Years	Over 65 Years
All Causes		64·69	4·12	4·39	10·26	33·76	99·15
Smallpox		...	...	...	...	...	...
Measles		3·52	0·11	0·02	...	...	...
Scarlatina		1·59	0·34	0·03	0·01	...	...
Diphtheria, Memb. Croup		1·25	0·35	0·01	0·01	...	...
Whooping Cough		3·66	0·04	...	...	...	...
Fever	Typhus	...	...	...	...	...	...
	Enteric	0·05	0·07	0·21	0·16	0·06	...
	Continued	...	...	...	...	...	...
Diarrhœal Diseases		4·31	0·01	0·01	0·01	0·05	0·63
Tubercular Diseases		4·46	0·93	1·57	3·38	4·58	2·98
Diseases of ...	Nervous System	4·46	0·33	0·16	0·51	1·57	4·69
	Heart and Blood Vessels	0·43	0·31	0·44	1·36	8·33	28·74
	Respiratory System	16·49	0·58	0·81	1·89	8·25	26·39
	Digestive System	3·18	0·26	0·34	0·47	1·52	2·85
	Urinary System	0·34	0·11	0·16	0·46	1·75	3·55
Other Diseases		20·95	0·71	0·64	2·01	7·63	29·37

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* For death-rates at all ages, see Table K.

TABLE N, 1902.—ANNUAL RATES OF MORTALITY IN STATISTICAL DIVISIONS AT SIX GROUPS OF AGES, *PER 1,000 LIVING AT THOSE AGE GROUPS, FROM CERTAIN PREVALENT DISEASES, AND GROUPS OF DISEASES.

CAUSES OF DEATH		Under 5 Years			5 to 15 Years			15 to 25 Years		
		Manchester Township	North Manchester	South Manchester	Manchester Township	North Manchester	South Manchester	Manchester Township	North Manchester	South Manchester
All Causes		76 76	59·38	61·88	4·66	3·67	4·16	4·80	3·95	4·47
Smallpox		...	...	...	...	...	..	...	...	...
Measles		3·56	5·11	2·33	0·07	0·17	0·08	0·04	...	0·02
Scarlatina		1·27	1·78	1·62	0·29	0·36	0·34	...	0·03	0·04
Diphtheria, Memb. Croup		1·40	1·11	1·27	0·11	0·30	0·51	...	0·03	...
Whooping Cough		4·52	3·42	3·35	0·07	...	0·06	...	...	...
Fever	Typhus	...	...	...	...	...	...	..	...	...
	Enteric	0·06	0·05	0·04	...	0·11	0·08	0·22	0·23	0·20
	Continued	...	...	...	...	...	...	...	...	...
Diarrhœal Diseases		5·98	3·38	4·06	...	...	0·02	0·04	..	...
Tubercular Diseases		5·60	2·41	5·33	1·43	0.74	0·79	1·77	1·71	1·37
Diseases of	Nervous System	4·52	4·15	4·66	0·44	0·36	0·24	0·18	0·14	0·16
	Heart & Blood Vess:	0·25	0·58	0·42	0·22	0·33	0·34	0·48	0·37	0·47
	Respiratory System.	20·37	16·26	14·51	0·70	0·47	0·59	1·03	0·63	0·82
	Digestive System	3·63	2·80	3 21	0·33	0·14	0·30	0·33	0·09	0·51
	Urinary System	0·38	0·19	0·42	0·07	0·11	0·12	0·11	0·14	0·20
Other Diseases		25·20	18 14	20·65	0·92	0·58	0·69	0·59	0·60	0·69

CAUSES OF DEATH		25 to 45 Years			45 to 65 Years			Over 65 Years		
		Manchester Township	North Manchester	South Manchester	Manchester Township	North Manchester	South Manchester	Manchester Township	North Manchester	South Manchester
All Causes		14·61	7·95	9·54	44·67	26·75	31·83	102·41	97·39	98·33
Smallpox		...	...	...	...	...	...	...	...	...
Measles		...	...	...	...	...	...	...	...	...
Scarlatina		...	0·02	0·01	...	...	...	...	...	...
Diphtheria, Memb. Croup		0·03	...	0·01	...	...	...	...	...	...
Whooping Cough		...	...	...	...	...	...	...	...	...
Fever	Typhus	...	...	...	...	...	...	...	...	...
	Enteric	0·20	0·08	0·18	0·05	0·09	0·06	...	...	...
	Continued	...	...	...	...	...	...	...	...	...
Diarrhœal Diseases		0·03	...	...	...	...	0·11	0·48	0·93	0·55
Tubercular Diseases		5·72	1·96	3·10	8·10	2·63	3·78	7·47	0·93	1·64
Diseases of	Nervous System	0·76	0·46	0·41	1·90	1 03	1·71	4 58	5·59	4·23
	Heart & Blood Vess:	1·85	1·24	1·19	10·54	7·37	7 67	25·30	27·73	31·28
	Respiratory System.	2·90	1·50	1·63	11·39	6 52	7·53	31·81	23·53	24·99
	Digestive System	0·48	0·40	0·51	1·75	1·03	1·68	2·65	2 10	3·41
	Urinary System	0·38	0·34	0·58	2·05	1·27	1·88	2 41	4·43	3·69
Other Diseases		2·26	1·94	1·92	8·89	6·80	7·42	27·71	32·39	28·54

* For death-rates at all ages, see Table K.

ABLE O, 1902.—PARTICULARS AS TO MANCHESTER PATIENTS UNDER TREATMENT IN THE SEVERAL FEVER HOSPITALS DURING THE YEAR; ALSO OF PATIENTS FROM OUTSIDE DISTRICTS SENT TO MONSALL AND CLAYTON DURING THE SAME PERIOD.

DISEASE	HOSPITAL	In Hospital commencement of year	Admitted	Discharged	Died	Remaining in Hospital close of year
SMALLPOX	Clayton Hospital	...	27	12	...	15
	Total	...	27	12	...	15
SCARLET FEVER ...	Monsall	345	1,861	1,733	122	351
	Other Hospitals.........	...	...	...	...	...
	Total	345	1,861	1,733	122	351
DIPHTHERIA	Monsall	20	244	175	66	23
	Other Hospitals	...	...	...	...	...
	Total	20	244	175	66	23
ENTERIC FEVER...	Monsall	28	234	190	31	41
	Other Hospitals	...	10	6	4	...
	Total	28	244	196	35	41
TYPHUS FEVER ...	Monsall	...	...	...	...	...
	Other Hospitals	...	...	...	...	...
	Total	...	...	...	...	...
OTHER ACUTE DISEASES	Monsall	14	215	190	22	17
	Other Hospitals	...	9	7	...	2
	Total	14	224	197	22	19
ALL DISEASES........................		407	2,600	2,313	245	449

ATIENTS SENT TO MONSALL, FROM DISTRICTS OUTSIDE THE CITY, DURING THE YEAR 1902.

DISEASE	Withington	Moss Side	Sale	Swinton Schools	Royal Infirmary	Cheadle Convalescent Home	Pendlebury Hospital	Chorlton Union Workhouse	Other Districts
Smallpox	1	...	...	...	...	...	...	...	1
Scarlatina	67	65	48	4	1	...	25	...	5
Diphtheria	6	9	3	1	...	...	...	...	...
Enteric Fever	3	5	1	...	1	...	...	...	2
Other Diseases..............	1	...	...	...	6	...	...	...	...

Total, 255.

TABLE P, 1902.—WORK OF SANITARY DEPARTMENT FOR THE YEAR.

		TOWNSHIPS																	
		Ancoats	Central	St. George's	Cheetham	Crumpsall	Blackley	Harpurhey	Moston	Newton	Bradford	Beswick	Clayton	Ardwick	Openshaw	Gorton (West)	Rusholme and Kirkmanshulme	Chorlton-upon-Medlock	Hulme	TOTAL
	Complaints to Sanitary Superintendent ...	3,006	1,203	2,938	2,152	275	407	884	994	1,955	2,430	1,169	2	240	1,580	415	165	1,510	3,150	24,475
Inspections of	Dwelling-houses	5,934	3,980	7,294	7,660	992	560	1,328	1,226	3,322	3,439	1,807	534	5,714	2,091	2,231	2,043	5,664	5,902	61,721
	Newly-infected Dwelling-houses	188	163	406	216	111	47	116	60	197	189	83	96	271	153	188	195	240	317	3,236
	Cellars..	31	8	...	...	...	...	...	...	...	19	...	...	15	...	1	...	...	34	108
	Schools	3	...	2	...	...	1	...	1	...	12	5	...	13	3	3	2	3	5	53
	Factories and Workshops	114	192	107	4	3	3	3	...	11	20	4	...	6	30	9	...	6	16	528
	Lodging-houses	248	274	763	129	2	...	...	...	5	1	3	...	28	10	1	7	37	265	1,773
	Offensive Trades	41	15	24	9	3	12	2	...	16	11	6	42	114	3	58	4	12	30	402
	Dairies and Milkshops....................	222	203	64	362	46	30	62	102	22	77	52	39	403	86	185	166	267	302	2,690
	Bakehouses	222	341	144	275	10	34	55	11	113	103	48	16	157	125	188	146	449	403	2,840
	Canal Boats	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,900
	Slaughter-houses	...	...	...	...	...	2	...	...	2	...	...	...	6	1	15	20	...	4	50
	Tips for Refuse..............................	...	...	1	3	1	7	18	171	10	2	...	1	4	59	...	4	...	...	281
	Miscellaneous Inspections	1,054	2,318	1,081	844	399	103	99	459	708	482	304	468	824	973	349	224	634	3,562	14,885
	Factories and Workshops by Shop Hours, &c., Inspectors.................	953	6,424	1,013	2,532	34	66	66	15	191	68	27	50	461	177	232	196	1,499	1,347	15,351
	Shops by Shop Hours, &c., Inspectors	206	1.030	209	587	...	104	153	16	84	92	13	74	200	155	169	118	547	511	4,268
	Infected Rooms Fumigated....................	581	38	1,527	403	215	40	99	230	503	666	262	47	297	580	45	271	87	671	6,562
	Infected Dwellings Re-inspected	556	369	947	438	255	101	255	188	478	300	264	511	593	192	396	521	580	791	7,735
	Drains Tested by Water	264	370	384	294	47	7	97	66	434	154	69	14	554	195	201	295	185	179	3,809
Smoke Abatement	Observations made	74	115	37	47	23	5	6	10	223	42	1	46	40	23	17	13	47	64	833
	Proceedings before Magistrates	20	37	10	18	4	1	4	9	36	4	2	7	12	5	3	1	16	5	194
Food Adulteration	Samples Collected for Analysis	195	150	155	78	10	8	47	29	113	80	23	28	153	104	113	56	254	211	*1,811
	Proceedings before Magistrates	10	23	3	...	...	...	2	1	2	1	2	...	2	6	...	3	1	8	64
	Ashpits reported to Cleansing Department for emptying	112	41	9	13	462	47	37	183	173	142	32	282	35	132	277	74	31	2	2,084
	Receptacles reported to Cleansing Department for emptying............................	162	88	178	891	2	1	19	4	58	29	83	1	75	15	60	19	15	60	1,760
	Notices issued for Abatement of Nuisances.	738	816	1,430	1,450	261	120	200	180	605	242	148	79	964	386	270	544	893	1,607	10,933
	Letters written for Abatement of Nuisances	56	45	75	188	12	8	3	2	39	7	2	3	7	20	2	26	65	99	659
	Reports made to Medical Officer of Health	3,020	1,940	2,750	2,053	538	386	888	1,006	2,033	2,654	1,183	952	2,796	1,793	1,673	1,318	2,758	3,412	33,153
	Legal proceedings taken	4	4	25	6	2	1	...	...	3	...	...	...	10	6	1	...	9	19	90
	Total Nuisances abated	711	574	1,388	1,583	267	103	207	180	514	346	179	106	809	461	200	544	871	1,336	10,389
	Number of Cottages under Five Rooms...	7,435	4,964	9,037	729	522	923	688	367	4,409	2,621	1,285	402	4,552	3,510	3,221	826	3,805	8,167	57,463

* 4 Samples from Outside City.

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